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Acute Renal Insufficiency

• A thorough study on the subject which is of interest not only to the urologist but to all clinicians.

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THE treatment of acute renal insufficency, in the past thirteen years, has made great strides. There have been established certain basic therapeutic fundamentals which demand emphasis in an effort to erase the confusion that understandably exists in the minds of many physicians. The importance of this subject is set forth by the following statement: "there is no phase or speciality of medicine in which this syndrome may not be encountered, wherefore a knowledge of this subject is necessary for every practicing physician."[2] It is the purpose of this presentation to set forth the logic supporting the present day therapeutic perspective of acute renal insufficiency.

Homeostasis protects man from destruction by his environment. This normally is accomplished by the functional capacities of the kidneys, lungs, gastrointestinal tract and endocrine system, but the kidneys are primarily responsible for the volumetric and chemical regulation of body fluids. Thus, the reason for the serious consequences of acute rénal insufficiency are apparent and the treatment of renal failure must be directed toward minimizing and re-adjusting homeostatic abnormalities in hopeful anticipation of renal recovery.

Causes

Fundamentally, acute renal insufficiency is due either to a group of factors with associated renal circulatory ebb and the resultant anoxia or to the effects of exogenous toxins. Luecke[18] visualized the lesion in the distal tubule (lower nephron nephrosis). However, Oliver[22,23] demonstrated the ischemic lesion as disturbing "random areas of random tubules" and histologically characterized by "disruptive tubular damage." In the shock kidney the basement tubular membrane is always disturbed; whereas, in the nephrotoxic kidney (poisoning by mercuric chloride, potassium chlorate, etc.) the basement membrane is intact. The time necessary for

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reversibility is proportional to the degree of tubular damage.

Basically the cause of death in acute renal insufficiency is due to: (1) hyperpotassemia and/or (2) pulmonary edema. The cerebral and gastrointestinal symptoms associated with uremia are due probably to an accumulation of organic acids in the body. Azotemia per se is not associated with lethality, but reflects symptomatologically the associated accumulation of organic acids, phenols, guanadine, catecholeamines, conjugated cortico-steroids and creatinine. Therapeutically it is imperative, therefore, to avoid overhydration (prevent pulmonary edema) and hyperpotassemia (circumvent cardiac failure).

The source of water in the body is both exogenous and endogenous. Endogenous water, or water of oxidation, is a real lurking hazard in these patients. This water results from the catabolism of fat and protein stores in the absence of adequate caloric intake with a minimum average of 500 cc. per day. The presence of any catabolic process, depending upon its activity, may vastly increase the amount of endogenous water; i.e., fever, infection, endocrine dysfunction, trauma, etc. It is well to remember that endogenous water is free of sodium and when thrown into the circulation in large quantities it may dilute the plasma electrolyte values. This is clinically usually insignificant if its correction is resisted.

Daily Fluid Intake

The daily fluid intake requires careful studied consideration. Assuming the water of oxidation to be 500 cc. per day and the insensible fluid loss of the body (respiration, skin, bowel) to be 1000 cc. per day the 500 cc. deficit must not be exceeded in the daily fluid intake. If glucose is used its volume should be calculated on the basis of 7 to 8 cc. per kilogram body weight and in infants or children a replacement of 0.5 to 1.0 cc. per kilogram body weight per hour is a fundamental requirement.[27,1] Fever increases the insensible water loss and should be replaced by calculating the necessary volume since each degree of fever permits a 13 per cent water loss.[20] Furthermore, gastrointestinal losses must be replaced volumetrically. The amount of vomitus or volume by gastric suction should not be equally replaced by saline. Generally a 50 per cent replacement with normal saline and the remainder in distilled water with dextrose will avoid potential hypernatremia with its associated pulmonary edema.

Water replacement is most accurately accomplished by daily weighing of the patient. Satisfactory portable bed scales are available. The loss of one-half to one pound per day is consistent with proper water balance. Weight loss in excess of a kilogram per day suggests starvation and fluid deficit.[27]

The presumed *les bras croises* program of water restriction in the eyes of the patient and his family may result in apprehension and confusion since both feel that quantities of medication and "glucose" would certainly be more rewarding than the obvious daily "do nothing" program while they watch the patient's apparent decline and unimprovement. The necessity of obtaining the confidence of the family and patient in respect to the therapeutic regimen may be as trying, but an equally important therapeutic facet. Controlled accurate hydration is the very crux of the treatment of acute renal insufficiency and must be so regarded if the physician is to be rewarded with a live and active patient following this ordeal of seemingly endless oliguria and anuria. The ostensibly innocuous use of cracked ice must be permitted only after realizing that each teaspoon represents 10 to 15 cc. of water.

Caloric Considerations

Acute renal insufficiency is a self limited disease and thus a full caloric replacement is not necessary. To prevent endogenous and exogenous protein breakdown is the primary goal since the end-products cannot be excreted by the kidneys (i.e., potassium, nitrogenous residues, sulfates and phosphates). Under normal circumstances 100 grams of glucose per twenty-

four hours is sufficient. However, in the presence of fever or trauma this is not adequate to sufficiently inhibit protein catabolism and the ketosis of fat starvation.

To administer highly concentrated dextrose solutions, in order to minimize the fluid intake and prevent venous thrombosis from vein wall irritation of these solutions in smaller veins we use a polyvinyl catheter (14 to 16 F.) in the vena cava threaded through the superficial saphenous vein.[24,26] This catheter is inserted at the outset of the illness and affords a simple route for repeated collection of blood for chemical analysis without daily venopuncture and associated discomfort to the patient, the administration of packed red blood cells, salt free albumin, etc. We have left this catheter in place for a two week period without untoward effect throughout which time the patient was moderately heparinized. This procedure permits unhampered nursing care and a greater degree of activity for the patient.

It is our practice to administer 200 grams of glucose per twenty-four hours in 400 cc. of water as the basic requirement. This is modified as indicated by factors such as gastrointestinal loss, trauma, and fever.

Insulin

Insulin hastens the conversion of glucose to glycogen by the liver and affords a glycogen-potassium complex within the cell which prevents or materially reduces extracellular hyperpotassemia.[21] The insulin should be added to the glucose to provide a continuous effect. Regular insulin is used in the proportion of 1 unit per 3 grams of glucose. Frequent blood sugar examinations are essential to avoid confusion between the symptoms of mild hypoglycemia and uremia.

Steroids

Androgens have been shown to materially reduce protein catabolism.[13] There is some divergence of opinion in this regard in the literature, but we have considered it helpful provided that it is used in sufficiently large doses throughout the period of oliguria (25 to 50 mg. per day).[20]

Potassium

Hyperpotassemia is a silently fatal complication. Exogenous potassium must be carefully avoided. Orange juice and beef broth are particularly high in potassium. Beware, the solicitous grandmother who may unwittingly destroy the physician's gains with a daily portion of her all healing "beef stock." Foods to be avoided because of their high potassium content are: dried fruits, bran flakes, rye flour, graham crackers, nuts, cocoa, molasses, potatoes, beets, raw cabbage, raw carrots, beans, peas and popcorn.[3]

Transfusions must be used with caution since the serum potassium content of banked blood increases with the age of the blood.[13, 29] Transfusions in acute renal insufficiency are not indicated unless the erythrocyte count falls below 3,000,000 and the hematocrit below 15. Even severe anemia is well tolerated by the uremic patient and is apparently occasioned by the homeostatic mechanism since even with transfusions the hematocrit remains low.[20,28] This anemia may extend well into the diuretic phase of the disease and should not occasion alarm.[20,28]

Hyperpotassemia may be controlled within certain limits by the following methods: (1) insulin (previously discussed), (2) calcium, (3) sodium and (4) ammonium carboxylate cation exchange resin.

Calcium acts as an antagonist toward potassium without changing the plasma level. A 1 or 2 per cent solution of calcium gluconate may be included in the infusion when there is evidence of cardiotoxic effects of hyperpotassemia. The dangers of digitalis in the presence of hyperpotassemia and calcium will be discussed later.

Hyponatremia is a normal course in the oliguric state. This is of no clinical significance. Only in the instance of severe dehydration and sodium depletion is there any value in correcting this disturbance. The use of intravenous fluid therapy does

not appear to be a factor in producing hyponatremia, but is probably an adaptive homeostatic mechanism incident to uremia. Unless there is an actual salt depletion or water intoxication there is no response to hypertonic salt[6] and furthermore its use may initiate sudden pulmonary edema, overhydration, cardiac failure and death.

Ion exchange resins unquestionably have merit in the control of hyperpotassemia. However, they are not without danger. Fundamentally cation exchange resins are synthetic polymers with carboxylic side chain groups which substitute hydrogen or ammonium ions for other cations such as sodium, potassium and magnesium. Ammonium resins are used to eliminate potassium in both prophylactic and definitive therapy of potassium intoxication[9, 8, 14, 15] The possibility of acidosis due to the substitution of hydrogen or ammonium ions for potassium, sodium and calcium ions is ever present. The possibility of removing calcium ions with a resultant hypocalcemia must be considered. However, even in the face of these possibilities we find that the use of resins by mouth, gastric tube, or per rectum has been gratifying.* Resins must be used with controlled caution, with plasma electrolyte studies to demonstrate any changes particularly of potassium levels. We have seen instances of unexpected hypopotassemia.

Digitalis

Digitalis must be used cautiously in the face of hyperpotassemia. The presumed cardiac failure associated with acute renal insufficiency is of the high output type which does not respond favorably to digitalis.[4] Characteristically this cardiac disturbance demonstrates tachycardia, high venous pressure and a wide pulse pressure. In spite of this the patient should never be digitalized in the presence of hyperpotassemia unless it is absolutely necessary since as the potassium level rises the effect of digitalis is diminished.[5, 8] Furthermore, the combined use of digitalis and calcium may prove dangerous. The precise risk of digitalis in the presence of hyperpotassemia being that when the potassium level falls through diuresis, dialysis or resin effect the previously nontoxic amount of digitalis may become sufficiently toxic to incite ventricular fibrillation and death.[5]

Dialysis

The conservative treatment of acute renal insufficiency, that we have discussed, has been effective in approximately 80 per cent of our cases. Radical therapy or dialysis has been necessary for the remaining 20 per cent. Dialysis must be undertaken before the patient's condition has undergone profound deterioration. The precise indications for dialysis are difficult to outline and must be individualized for each patient.

The criteria that we have employed are: (1) a blood urea nitrogen in excess of 150 mg. per 100 cc. of blood unless the patient's general condition suggests earlier dialysis, (2) hyperpotassemia in excess of 6.5 mEq. or electrocardiographic evidence of cardiotoxic hyperpotassemia, (3) pulmonary edema, (4) congestive heart failure (early) and (5) edema due to overhydration.

It is important to realize that electrocardiographic evidence of hyperpotassemia depends not upon a single tracing, but a series of tracings to visualize the early progressive changes of hyperpotassemia; namely, (1) elevation and narrowing of the T waves, (2) diminished R wave, (3) prolongation of the PR and QRS intervals, (4) depressed ST segments, and (5) diminished or absent P wave.[20]

Hemodialysis is not without its hazards, but its delay may result in a fatality that otherwise might be avoided. It is beyond the scope of this presentation to discuss the merits and shortcomings of the various methods of dialysis, but suffice it to say that the patient with acute renal insufficiency should be transferred to a renal center sufficiently early to offer him every opportunity. All too often the patients are transferred after all else fails

* Smith, Klein and French, Special Resin 648.

and the complications have introduced an irreversible situation.

New methods of hemodialysis are constantly under study and there is good reason to believe that our successes will increase preceptibly.[11, 25]

Summary

Some of the basic therapeutic concepts of acute renal insufficiency are discussed. A method for the conservative phase of management is outlined. Granted that much has been left unsaid, but this is necessarily occasioned by the magnitude of the subject.

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Tussive Unconsciousness

• The author gives the report of a case, which he believes to be the fifth of this disease described in the literature, although a few others have been reported in whom the unconsciousness was not complete or there was a suspicion of epilepsy.

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SEVERAL diseases are described under the name "Tussive Syncope" which appear to be different entities. What speaks strongly for the conception of different entities, is the fact, that every form always returns with just the same pattern, never going over from one form to another. The three diseases which until now, are called by the same name, are:

1. **Tussive unconsciousness.** I could find only four cases of this disease in the French and English literature. In the American literature I found several descriptions of the other forms, mentioned under (2) and (3). These four cases, just as the fifth case, described here below, always showed a special pattern. This pattern returned in every attack.

2. **Tussive syncope.** McCann et al.[1] described this form: Never complete loss of consciousness; never symptoms of epilepsy. It appeared to be that the syncopal response to coughing, was caused by cerebral congestion, followed by cerebral anoxia.

3. **Tussive epilepsy.** Signs of epilepsy, mostly with abnormal cortical potentials in the EEG; no signs of cerebral congestion with cerebral anoxia.

Case Report

The case described here was a man of 53 years from Sodus, N. Y. His work was metal sorter (junk business). I had examined the patient several times since 1952. He died suddenly on June 1, 1958 from an unknown cause. Autopsy was not permitted by the family. He was a stout man with abdominal obesity. His weight had been 235 pounds, but was decreased to 214 pounds. He was a heavy cigarette smoker. Lungs and heart showed no abnormalities. Chest x-rays within normal limits. Blood pressure 112/70. Abdomen: liver palpable and enlarged. The prostate was much enlarged, about twice the normal size. However, no complaints with reference to the prostate were given. Blood: No abnormalities, except an anemia during the period of a duodenal ulcer, confirmed by x-ray. At that time his hemoglobin was 12.4, determined by the cyanidmethemoglobin method. The duodenal ulcer was cured by a strict diet in 1954.

Since 1941 the patient had had attacks of tussive unconscicusness. The attacks generally came twice a week, but somtimes he was free from them for a whole week and at other times the attacks came three times a week. "Ordinary" coughing after "colds" never ended with attacks, even if the coughing was severe. He could recognize the innocent coughing immediately. The more dangerous cough began always with a queer tickling in his throat, which was followed, after a few seconds, by a light cough—never a violent cough. A few seconds later the unconsciousness began, which lasted a few minutes. He felt the queer tickling on the right side of the throat but the mucosa looked normal in that spot. The tickling in the throat was the warning signal. If he was driving his auto, he had to go immediately to the side of the road. Once he had a bad collision, for which he said that not he, but the other fellow was to blame. The unconsciousness was complete. He could not remember an attack. He knew of it only if his wife saw it and told him later, or if, after auto-driving, he awakened standing on the side of a road. His wife noticed that during the unconsciousness his face was pale. The face was never cyanotic and he never showed shortness of breath. After the unconsciousness he could immediately continue his work, until two years ago. During the last two years he had to take a little rest before he could continue his work. Sometimes he told me, he could "fight off" the unconsciousness, standing on the side of a road, but his wife never saw such "fighting off". Therefore it was probably a short unconsciousness, which he did not remember. The electrocardiogram showed no abnormalities.

The EEG also showed no abnormalities. (It was a regular low voltage record with alpha-

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rhythm of about 10 seconds.) No incontinence, no biting of tongue, no convulsions.

Differential Diagnosis

The differential diagnosis from the two other forms, mentioned above, can be made as follows:

From the tussive syncope: The patient did not have any sign of cerebral congestion and cerebral anoxia. To this form of tussive syncope belong the cases, described by McCann W.,[1] Wilkins and Friedland;[4]. Probably also the cases described in Norway by Schwartz, Derbes and Kerr,[6] because the victims were nearly always suffering from emphysema, asthma and bronchitis. It is interesting that they were also often heavy men, addicted to tobacco. However many details are missing, which we need for a correct differential diagnosis.

The differential diagnosis is easily made from tussive epilepsy, if one requires that at least some sign of epilepsy should be present before accepting this diagnosis. Cases are described by Witty[3] and Rook[6] which belong to this form. The patient described in this article showed no signs of epilepsy, no biting of tongue, no incontinence, no convulsions. He had no epilepsy in his family. The EEG was normal, although this alone is not sufficient to exclude epilepsy, because a normal EEG is found in about 20 per cent of epileptic cases.

The four other cases with the pattern of tussive unconsciousness, shown by the patient here described, were the following:

Charcot[2] was the first author, who observed and described in 1876, a case, very similar to the patient described in this article. It was a man of 54 years of age, not an epileptic, who for a year had attacks, beginning with a tickling in the larynx, then a light cough, followed by unconsciousness. He did not bite his tongue and did not lose urine. The attacks became more and more frequent, sometimes 15 a day, each time following tickling in the throat and a little coughing. The unconsciousness lasted a short time. Another case described by Charcot belongs to another form of the disease, namely to the tussive syncope.

Witty[5] described three cases, which belong to the form, observed in the patient, described in this article. One of these patients was a carpet-merchant, 47 years of age. Seven years ago, he had had an attack of laryngitis, which left him with an irritating cough. After some attacks of cough, he lost consciousness. No history of epilepsy. He was a stout plethoric man. No further observations were possible.

The other patient of Witty[3] was 42 years of age. He was manager of a bus company. During the two years previously he had four attacks of unconsciousness, following bouts of coughing. Before the beginning of the coughing he had a "queer" feeling in a straight line from his epigastrium up to the top of his head. It was not restricted to the region of the throat. The cough was not violent. He smoked twenty cigarettes a day. He was a thick plethoric man. His height was 67 inches and his weight 208 pounds. No incontinence, no tongue biting, no convulsions.

A third case described by Witty[3] was a man of 33 years of age. He was a miner. The attack began just as in the case described in this article and just as in the case described by Charcot, with a tickling in the throat, causing a dry cough, soon followed by an unconsciousness of one to two minutes' duration. Just as the patient described in this paper he could distinguish an ordinary cough after colds from the cough that was followed by unconsciousness. No personal or family history of epilepsy. He was a stocky obese man whose height was 68 inches and whose weight was 184 pounds. Carotid-sinus pressure or constriction of his neck with 90 mm. Hg. pressure for forty-five seconds did not cause the attacks.

Resumé

A man of 53 years of age often had attacks of unconsciousness which lasted about one or two minutes, which followed short, not violent, coughing spells. The attacks of coughing began immediately

after tickling in the throat. No personal or family signs of epilepsy. The pattern of the attacks had not changed during fifteen years. He was a stocky obese man and a heavy smoker of cigarettes. Obesity and heavy smoking seem often to give a predisposition, not only for the tussive unconsciousness, but also for the other forms, here mentioned, although not present in all described cases and therefore not to be considered as the cause of the attacks.

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Electro-Galvanic Theory of Yellow Fever

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Having depended much on the analogy claimed, the writer feels much encouraged in the belief that disturbed electricity will yet be proven to be the exciting cause of this fever; that there is a deficiency of air-electricity at high tension and probably negative; that the earth may be excited beyond the norm; that the irritation starts in the nervous system; that it will yet be acknowledged that the vast organic changes are the direct result of the nervous aberration. Every inference contained in the preceding pages has been drawn from a prodigious number of facts and statements made by the very highest authorities, who observed correctly and drew strictly legitimate deductions which cannot be set aside as uncertain, and must be respected until disproved by others founded upon equally numerous and equally well observed data.

New Orleans M. & S. J. 9:46 (July) 1881.

The Surgical Treatment of Pulmonary Complications of Pneumonia in Children*

• The treatment of pneumonia is primarily medical, but if the pleural space becomes contaminated, it becomes a surgical problem as well.

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CHEMOTHERAPEUTIIC agents have drastically reduced the mortality and morbidity which has been associated with pneumonia throughout the years. However, increasing reports in the literature call attention to the emergence of resistant strains of organisms with a resultant increase in both the incidence and complications of pneumonia, primarily staphylococcal, and particularly in children.[1-3] Even strains of organisms sensitive to numerous drugs, under certain circumstances, are capable of producing life threatening complications which can tax the knowledge and patience of even the most skillful and patient group. The purpose of this communication is to call attention to the fact that pneumonia still can be a serious disease and to elaborate on the surgical management of the complications.

Case Reports

Case No. 1—A two year old boy was readmitted to the hospital three weeks after removal of a ruptured appendix. During the three week period at home, he had been listless, pale, intermittently febrile, and generally uncomfortable. On readmission his temperature was 103°, WBC 17,000 with 93 per cent polys. His right hemithorax was flat to percussion and there were no breath sounds. X-ray showed complete opacity of the right hemithorax.

Thoracentesis yielded 180 cc. of purulent, watery fluid and micro-aerophilic streptococci and hemophilus influenza, sensitive to a wide variety of drugs, were grown on culture. Feeling that the nidus of infection was below the diaphragm, the right posterior subphrenic space was explored, but no abcess found.

Two days later the anterior subphrenic space and abdomen were explored and were likewise, found to be free of infection. Under the same anesthesia, the patient was placed in the semi-left oblique position and a decortication performed. The entire lung was completely atelectatic and trapped by a one inch thick, shaggy, dirty pleural rind. Several hundred cc. of rather thin, trapped exudate was removed. All lobes were freed and the lung re-expanded. Two large (28) tubes were placed in the pleural space and connected to under water suction. The post-operative film showed complete re-expansion of all lobes. Following removal of the tubes, a lateral empyema space remained and it was ultimately necessary to remove a portion of rib and convert this to open tube drainage. Subsequent films showed excellent clearing of the pleural space.

DISCUSSION: It must be assumed in this case, that the empyema developed secondary to an undiagnosed pneumonia, probably masked by the antibiotic coverage of the ruptured appendix. In the presence of a completely atelectatic, trapped lung, and total empyema, re-expansion of the lung and complete clearing of the pleural space, can only be accomplished by decortication with subsequent large tube, under water drainage. Chemical enzymes, such as Varidase, although useful in limited empyemas, should not be expected to free the lung and pleural space of a thick, well established rind.

Despite chemotherapy and repeated thoracentesis, this patient was extremely ill at the time of decortication. Immediately following surgery, he was dramatically improved with a marked subsidence in fever, improved respiration, and general well being. He subsequently made a complete recovery.

Case No. 2—A three year old girl with a temperature of 103.6 was admitted to the hospital two weeks following the measles. A large collec-

* Presented at the Eightieth Annual Meeting of the Louisiana State Medical Society, May 3, 1960, in Baton Rouge.

tion of pleural fluid was aspirated from the left pleural space and a pure culture of staphylococcus aureus, sensitive to all drugs tested, but penicillin and the sulfas, was isolated. Continuous under water tube drainage was instituted and the patient improved immediately. The empyema space became smaller, but did not completely disappear. Pneumatoceles, characteristic of staphylococcus pneumonia, developed in the lower lobe. The exudate was so thick and tenacious that the tubes had to be replaced several times. When drainage ceased, fever and toxicity returned immediately. Intermittant aspiration was tried and found to be worthless. At one time, a small bronchopleural fistula developed, but closed in forty-eight hours. The empyema finally became localized to a small lateral space and open tube drainage through an area of resected rib was carried out.

DISCUSSION: The basic principle of adequate drainage of localized infection is still as important as it was prior to the days of chemotherapy. The prompt return of fever and toxicity as soon as drainage became inadequate, despite full coverage with organism sensitive drugs, soon prompted us to discontinue all chemotherapy. It became readily apparent that once the empyema became localized and adequate drainage was instituted, the patient could handle her own infection without chemotherapeutic aid.

Case No. 3—A five year old girl was admitted to the hospital with acute abdominal distention, slight cyanosis, shortness of breath and fever of 105°. X-ray of the chest revealed right lower lobe pneumonia as well as extensive ileus. Nasogastric suction was instituted and chemotherapy started.

Three days later, she rather suddenly began to cough up voluminous amounts of purulent, foul smelling, dirty greyish material and x-ray of the chest revealed a pneumothorax. Pleural aspiration yielded a pure culture of staphylococcus sensitive to a very wide variety of drugs. Under water, closed tube drainage was instituted and a large bronchopleural fistula was apparent. Tremendous amounts of pus and air gave evidence of adequate drainage, but the temperature rose daily to 105° for seven weeks.

Antibiotic coverage included Chloromycetin, Cer-O-Cellin, Ilosone, Kantrex, Tao, Vancocin Vancomycin, and Albamycin. Supportive drugs included Gamma Globulin on two occasions, Nilevar, Redisol and four blood transfusions.

Pneumatoceles, parenchymal infiltration and consolidation, purulent pleural exudate, as well as the bronchopleural fistula, continued and progressed in complete disregard of all antibiotic coverage, plus adequate drainage. She was critically ill for eight weeks.

Intravenous fluids and repeated transfusions gave adequate support until she began to eat. It became aparent that antibiotics were of no help in controlling the infection. Therefore, they were all discontinued after the fourth week. Gradually, the temperature began to come down after the eighth week, she began to eat, and her strength began to improve. Her fistula remained open, but the pleural exudate decreased and finally ceased. The pleural catheter was converted to open drainage and she tolerated it quite well despite a very large fistula. A small segment of rib was removed, two large tubes were placed in the pleural space and the patient was discharged on the sixty-third day, with a persistent bronchopleuro-cutaneous fistula. She remained afebrile at home; her mother changed the dressing daily using sterilized Kotex pads and the fistula gradually closed. Pneumatoceles persisted, but have gradually decreased in size and at present, the lung and pleural space appear almost completely normal.

Medical Treatment

Drugs: The treatment of pneumonia is primarily medical and antibiotics to which the offending organism is sensitive should be given in large amounts. Two or three drugs are frequently used simultaneously. It should be realized, however, that the staphylococcal organisms are often entirely unpredictable. It is well known that they may respond to large doses of penicillin, although, they do not show disc sensitivity. Conversly, as shown by this case, they may be disc sensitive to many drugs, yet respond to none.

An atmosphere high in humidity and oxygen content, with or without Alevaire, seems to make bronchial secretions more easily handled by the patient. Postural drainage may be helpful. Adequate hydration of the patient with intravenous fluids, if necessary, likewise helps thin bronchial secretions as well as maintain fluid balance.

Repeated blood transfusions may be extremely helpful. Our third case received a total of four transfusions during her nine weeks' hospitalization with very marked benefit each time. Gamma Globulin in large doses may be indicated, particularly in children under one year of age. This was tried in our third case, but

did not seem to alter the course of the illness. Nilevar, 10 mg. daily, seemed to be helpful in Case No. 3.

Pneumatocles

When small bronchi become filled with thick, plastic exudate and cellular debris, they act as one way valves, allowing air to enter on inspiration, but not on expiration. Collateral pores are, likewise, closed by this process. Therefore, tension areas develop. The formation of pneumatoceles is characteristic of staphylococcal pneumonia. They may form in any stage of the infection and they may rupture to form pyopneumothorax. This condition is almost diagnostic of staphylococcal infection in children. They may become very large, compress the normal lung, and shift the mediastinum to cause serious interference with respiration.

In such instance, direct intubation of the offending cyst with under water suction is advocated and may be a life saving procedure, particularly in infants. They may become filled with purulent exudate and act as lung abscesses. Aspiration by needle or tube, when possible, is the procedure of choice for this condition.[4] These air spaces may be very slow to resolve and actually, as the surrounding pulmonary infiltration clears, they may become more apparent as the patient improves. It is sometimes difficult to differentiate between large pneumatoceles and pneumothorax. It is important to make this differentiation because closed tube drainage is indicated immediately in pyopneumothorax while pneumatoceles generally need no surgical attention.[5]

Generally, all of these pneumatoceles will disappear in time, but it may take as long as six months. Resection of the pulmonary tissue containing these areas is rarely necessary, unless they become grossly infected and act as a chronic lung abscess.

The pleural space tends to become involved early in a large percentage of staphylococcal pneumonias. The aspiration of purulent exudate permits culture and sensitivity studies, relieves the toxic effects of staphylococcic pus and allows re-expansion of the lung. When pyopneumothorax is present, continuous closed tube drainage is always advised. It may be life-saving. Continuous pleural drainage is not necessarily indicated in all cases of empyema, however. It must be emphasized that one should not compromise on the establishment of early and adequate drainage. If the lung becomes trapped in a thick rind, decortication will be necessary if re-expansion is to be accomplished. A tube as large as the interspace will permit will be very beneficial in insuring adequate drainage of the thick tenacious pus of staphylococcal empyemas. If the pus becomes loculated, the tube location may have to be changed many times, and if the tube becomes plugged, it should be replaced. Fever and toxicity will return immediately when drainage ceases. Utilizing continuous drainage, the empyema space may become obliterated completely, but occasionally the remaining space may have to be handled by a small rib resection and open drainage. In all three cases reported here, open tube drainage was necessary to handle the residual space.

Once empyema is established, generally speaking, a long illness is in store if the offending organism is a staphylococcus. Antibiotics certainly have altered the outcome of the pulmonary infection, but once the pleural space is involved, a protracted course is usually the case.

Summary

The treatment of pneumonia is primarily medical, but if the pleural space becomes contaminated, it becomes a surgical problem as well. Early and adequate drainage of the pleural space is necessary, whether by repeated needle aspiration or continuous tube drainage. Pyopneumothorax demands early, continuous tube drainage. Residual, localized empyema space may necessitate open drainage. Large pneumatoceles may compress good lung tissue, shift the mediastinum and embarrass respiration. In such instances, direct intubation of the air space is advocated. Once the pleural space is contam-

inated by the staphylococcus, a protracted illness is usually the case.

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Good Whiskey and Bad—The Bourbon Whiskey of Kentucky

It has been in the last two or three decades only that Kentucky whiskey has been sought after to any great degree by the connoisseurs in the Northern or Eastern States, but the demand for it has steadily grown all over the Union, during the period named. In the South, it, with similar brands is nearly the only kind of whiskey sold. Within the borders of Kentucky the excellence of the native beverage has been known almost ever since the State began, and there is no jury like a home jury in matters of this sort. * * *

The whiskey which originally gave reputation to Kentucky manufacturers was generally made in small quantities by apparently very rude methods. Often the distillery was one of the sources of profit of the farm, and supplied perhaps the neighborhood only. The ruins of these still-houses are seen scattered over the State. There was no attempt at adulteration, as the price, even for the best when new, seldom exceeded twenty-five cents per gallon. * * *

With the war came the tax upon distilleries, and the government officers to watch the manufacture and to collect the revenue. Then, of course, all the neighborhood stills stopped, except such as were run by the light of the moon. Large capital was required to manufacture whiskey, and the distilleries shrank in number and increased in size. With a tax on them which exceeded ten times the amount the liquor originally cost, it was impossible to keep them off the market long enough for them to obtain the proper age. *Louisville Medical News*, Jan. 8.

New Orleans M. & S. J. 8:1171 (June) 1881

The Role of Chelating Agents in Dermatology

• The concept that certain chronic and morbid disease processes might be related in part to metal binding anomalies suggests a new therapeutic approach in medicine. Clinical medicine has available for its use a class of drugs whose full potential is yet to be explored.

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CHELATING agents are a family of chemicals able to bind heavy metals so tenaciously that they lose their toxic and/or physiological effects. The use of these agents offers a fascinating and relatively new approach to the treatment of certain dermatologic diseases.

"Chelate" is derived from the Greek word claw "Chele."

A chelating agent is an electron donating compound which forms an internal complex with a metallic ion, thereby deionizing and deactivating the metal. This property depends on the presence of adjacent chemical groups, which by virtue of possessing coördinate valence can simultaneously complex with a metal. A closed ring structure is thereby formed, and within this new structure the metal is firmly sequestered. A "Chelate", then, is a compound formed between a metallic ion and an organic molecule, having 2 neighboring groups capable of simultaneously combining with the metal to form the ring structure. The chelate resembles a claw with the metal ion clutched between the pincers of the organic molecule.[1]

The chelate structure has such high stability that the metal ion is no longer available for its usual reaction. Most of the biological, chemical, and physiological properties of the metal are changed. It is not our purpose here to discuss the many effects of chelate rings which tend to increase the stability of the metal chelate compounds. These effects are quite important, but they have been described in detail elsewhere.[2-5]

The chelating principle was first recognized by Werner in 1901.[6] It was first used biologically in a study of the effect of free calcium ion concentration on the contraction of the ventricle of frog heart. Morgan and Drew[7] coined the name "Chelation" in 1920 after the Greek word for claw (Chele). A chelate was first used on the skin by Popovici, Geschickter, Reinovsky, and Rubin [8] in a study of systemic absorption and its effect on blood calcium levels.

Although the principle of chelation had been used only sporadically in medical practice prior to the 1940's, it became of great importance early in World War II,

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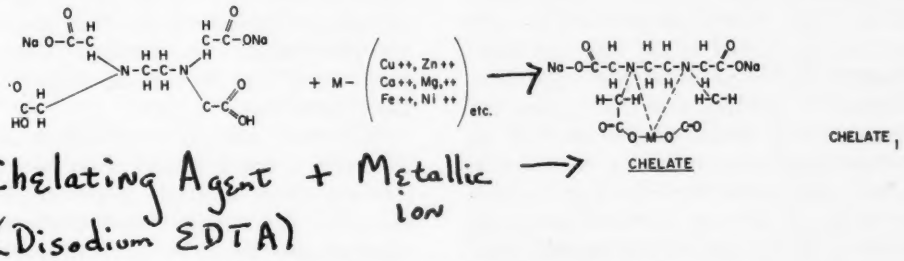

Chelating Agent + Metallic Ion → CHELATE
(Disodium EDTA)

[Chelating Agent + Metallic Ion → Chelate]

because of the danger of poisoning from the arsenic containing war gas, Lewisite. Peters,[9] in England, discovered that the mercapto groups of 2, 3-dimercapto 1-propanol chelated the arsenic efficiently and tenaciously yielding an inactive compound which could be readily eliminated. This agent was called *British Anti Lewisite* or *BAL.*

Shortly after the war, the problem of atomic fission products led to the study of agents capable of decontaminating individuals or objects exposed to them. Workers in Germany led by Pfeiffer and Schwartzenbach [10] had studied a series of compounds built upon a basic structure, consisting of 2 carbon atoms and 2 nitrogen atoms—known as *Ethylene Diamine.* One compound in this series showed outstanding ability to chelate heavy metals, ethylene diamine tetraacetic acid—EDTA —this is probably the most potent chelating agent known.

Properties of Trace Metals

1. Chelates of EDTA with heavy metals are very stable.

2. Chelated metals may be displaced by other metals provided the second metal is bound more strongly than the first.

Metals form chelation rings in a descending order of attractivity to a chelating agent as follows:

$$Pb > Cu > Ni > Co > Zn > Ca > Fe > Mn > Mg.^{11}$$

Thus, lead will displace copper in a chelation ring, copper will displace nickle etc. A weak chelate such as MgEDTA would be expected to release its magnesium in favor of attracting and removing calcium.

3. Foreman and Trujillo [12] have demonstrated that EDTA labeled with C^{14} carboxyl is transferred intact into the urine by both glomerular filtration and tubular excretion and that less than 1 per cent is metabolized. Thus, 50 per cent of an I.V. dose could be recovered in the urine in one hour and about 98 per cent in twenty-four hours. The drug does not penetrate the erythrocytes and mixes quickly with all the body water, though diffusion into the cerebrospinal fluid was relatively slow.

4. When EDTA is given intravenously, the calcium salt is the predominant formation. One gram of EDTA binds approximately 108 mgm. of calcium in vitro.[13] In vivo, it is only 45 to 72 per cent as efficient—the remaining 28 to 55 per cent may be partially bound to various other metals found in body fluids, probably in the order of descending stabilities.

The Physiologic Importance of Trace Metals

1. Inter-relationships are known to exist between trace metals which, when deranged, may result in definite clinical syndromes. This effect is seen when EDTA corrects cardiac arrhythmias by restoring the proper ratio of calcium to potassium.[13]

It has also been shown that magnesium has a reciprocal relationship to calcium. Thus, the injection of magnesium results in a drop in serum calcium to tetany levels.[14] Ingestion of magnesium salts increases urinary calcium excretion.[15]

2. Trace metals act as integral constituents of numerous metalloenzymes: e.g., zinc is found in carbonic anhydrase, uricase, catalase, peroxidase, carboxypeptidase, lactic dehydrogenase and alcohol dehydrogenase.[15, 16] In Peters' [17] work with porphyria, reference is made to the possible effects of an excess of zinc upon certain enzymatic and endocrine functions which could be ultimately involved in the basic pathology of porphyria. This will be discussed more completely elsewhere.

3. Trace metals act as catalysts to numerous enzymes involved in the intermediary metabolism of food stuffs, e.g., magnesium is necessary in the process of phosphorylation, manganese, aluminum, cobalt, and zinc in various stages of the Krebs tricarboxylic cycle.

With such protean functions in normal physiology, trace metals must be considered to have multiple potentialities as causative or contributing factors in diseased states. Thus, we have an important and vital paradox: Metals may be toxic

agents in many diseases; metals are also vital to numerous body functions.[18]

There are many naturally occurring chelating agents, these include amino acids, proteins, carbohydrates, heme, chlorophyll, and certain organic acids such as citric acid. So that when a chelating agent is administered to an individual it must compete with these naturally occurring chelating agents for metal ions. Most of the complex reactions upon which the vital processes of living organisms depend are influenced at some stage by natural chelates formed by the union of a metal ion and a protein or some other natural structure.

Chelation, or metal binding, has extended into almost every realm of medicine: the treatment of industrial intoxications with heavy metals,[19-26] cardiovascular problems; e.g., digitalis intoxication,[27, 28] cardiac arrhythmias,[28, 29] calcific valvular disease, angina pectoris,[30, 31] metabolic diseases, contamination states from radioactive metals,[32] in dissolving of corneal opacities,[33] in preventing the clotting of blood,[34, 35] to name only a few.

We will attempt to discuss the role of chelating agents in certain dermatologic disorders.

Schroeder,[36] in 1956, was one of the first to suggest a correlation between trace metals and chronic disease. In an intriguing approach, he emphasizes the possibility that some of the chronic afflictions of man may represent essentially an aberration in trace or abnormal metal actions: e.g., trace metal deficiency, abnormal metal excess, metallo-enzyme competition by an extraneous metal, etc. He raises the question that scleroderma might in some unexplained manner be related to a derangement of calcium metabolism. Recent investigations appear to substantiate the view that the metabolism of calcium represents a large integrated physiochemical system, embracing not only extracellular fluids and bone, but connective tissue as well. It is interesting to note that many of the drugs used in the treatment of scleroderma have metal binding interrelationships (e.g., PABA, citric acid, dihydrotachysterol, promin, ACTH, cortisone, penicillin, cinchoninic acid and prednisolone),[37] and that their therapeutic effects are achieved in part by their chelating properties.

Tui[38] et al. in their work on protein metabolism and scleroderma suggest that an insidiously developing protein depletion might lead to a substitution of collagen and calcium for its normal protein constituents.

Earl Osbourne,[39] while at Mayo clinic, did a study which showed that one of the early changes in scleroderma was a deposition of calcium in the corium.

Klein and Harris[40] (1955) were the first to report benefits from chelation therapy in scleroderma and described decided improvements in the skin and joints of one patient suffering from scleroderma, sclerodactylia, and calcinosis.

Rukavina, Mendelson, Price[41] et al. used EDTA in the treatment of three cases of noncalcific scleroderma (acrosclerosis).

Method of Treatment

Dosage: The patient received 3 grams of Na-EDTA (Endrate) in 500 cc. glucose in D/W intravenously over a four hour period. The drip was used for five days, the patient rested for two days, and the cycle was repeated over a period of three consecutive weeks. A total of 45 gm. of Na_2 EDTA was received by each patient. Nicotinamide and pyridoxine were used along with EDTA. Foreman[44] has recommended 50 mgm. per kilo of body weight daily, with a daily maximum of 5 grams.

Results of Chelation Therapy

In Rukavina's series, significant changes were noted during the second week of therapy. The most striking changes occurred in the cutaneous and osseous systems: The skin became less tense and indurated, less shiny. There was an absence of joint pain on motion. Joint deformities, however, were little, if any, affected. One patient with ulcers on the fingertips and toes experienced a rapid regression and eventual disappearance of the ulcers. Bi-

opsy sections after therapy showed an increased prominence of the rete ridges, less dense fibrous tissue in the corium, and an increase in subcutaneous fatty tissue. One patient manifested improvement in the skin temperature of the fingers and toes, and the other two showed subjective improvement, although the findings could not be corroborated by oscillometric studies and histamine wheal injections. In all 3 cases, the serum calcium levels decreased: e.g., one patient's serum calcium dropped from 9 mgm. per cent to 5 mgm. per cent, but no clinical evidence of tetany was encountered. In all 3 cases, urinary copper and zinc excretions increased greatly (eg., twenty-four hour urine Zn increased from 0.5 mgm./ L to 10 mgm./ L). No major toxic effects were encountered. Since his original studies, similar improvement has been noted by Rukavina [42] in 4 additional patients with acrosclerosis treated with Na_2-EDTA.

In perhaps the largest series reported to date, Muller, Brunsting and Winkelman [43] of Mayo Clinic, used EDTA, in the treatment of 23 cases of scleroderma: 20 cases showed the predominant features of acrosclerosis, i.e., cutaneous sclerosis pronounced in the acral areas and spreading centrally, with vasospastic symptoms in the extremities. Two cases were diffuse scleroderma with central cutaneous sclerosis progressing peripherally without evidence of vasospastic symptoms, but with involvement of other organs. One case in the series was of widespread morphea.

Method of Treatment

Dosage was that recommended by Foreman,[44] i.e., 50 mgm/kilo of body weight daily for five days, followed by a two day rest period. The cycle was repeated for three consecutive weeks. Three patients received a second course following an interval of six to eight weeks. Some of the patients received 50 mgm. of pyridoxine and 200 mgm of nicotinamide daily.

Results of Chelation Therapy

During the course of therapy, the patients' subjective evaluations were noted periodically. *None* of the patients became worse during therapy. Almost *all* thought themselves improved. As in Rukavina's series, improvement was observed during the second week of treatment and reached its peak at the termination of therapy or shortly thereafter.*

By objective criteria, 9 of the patients experienced partial improvement. (25 to 75 per cent). Breaking his series down, Muller states that 7 to 15 patients with severe acrosclerosis, 1 of 5 patients with moderate involvement, 1 of 2 patients with diffuse scleroderma, all benefited from chelation therapy. It is interesting to note that the patient with morphea was not benefited. Objective evaluation of improvement depended mainly on the performance in certain functional tests such as crossing the legs, making a fist, opening the mouth, and esophogeal motility studies, together with over-all clinical evaluation.

Muller et al. feel that the use of edathamil in the systemic forms of scleroderma seems justified; but point out that the ultimate usefulness of this drug in the treatment of scleroderma awaits further evaluation. In a study requiring hospitalization and intravenous medication, the use of controls is very difficult. Whether EDTA will influence the course of the disease remains to be proved. At best it is an ameliorative, rather than a curative agent.

Discussion

It has been shown that EDTA influences the urinary excretion of certain trace metals. These trace metals form integral parts of many enzyme systems and it seems that EDTA could remove trace metals from enzyme systems or bind competitive inhibiting metals. When the tryptophan metabolism of patients with scleroderma[45] (acrosclerosis) or porphyria [46] was studied, it was found that these patients had a similar disorder of tryptophan metabolism in which the kynurenines and kynuerenic acid were excreted in relatively large amounts in the urine. In Rukavina's series,

* N. B. Clarke[64] believes that the in vivo action of EDTA persists for as long as a year after its administration.

all 3 patients with acrosclerosis were found to have abnormal tryptophan metabolism, characterized by an abnormally large urinary excretion of kynurenine, kynuerenic acid and its metabolites. During therapy with EDTA, two patients were found to have reverted to normal tryptophan metabolism, and a third experienced normal values after treatment with EDTA and pyridoxine. In view of the fact that kynureninase has been activated by magnesium ions, one might suspect that the abnormal tryptophan metabolism depends upon a functional deficiency of magnesium ions. The efficacy of pyridoxine plus EDTA could be explained on the basis of a decrease in tissue calcium and zinc, making it possible for the metal ions normally functioning with pyridoxal phosphate to be utilized more advantageously. The metal which is unblocked for normal function is magnesium. These observations suggest that the patients with acrosclerosis and porphyria might be deficient in the apoenzymes involved in the kynureninase and kynurenine transaminase reactions, that the active form of the enzyme might require some factor in addition to pyridoxal phosphate, or that an inhibitor of these enzyme systems might be present in the tissue.[47]

Sarcoidosis

EDTA has also been used in the treatment of sarcoidosis. In 1957, Rukavina[48] et al. published the results of an experimental study on 3 cases of sarcoid. The patient showed definite flattening of the cutaneous lesions. There was a moderate clearing of pulmonary densities in several patients. Histopathologic skin changes consisted of a decrease in epithelioid elements, giant cells, and lymphocytes. Of singular note, all 3 cases experienced an increase in zinc excretion. (e.g., from a normal of 0.01 mgm/L to from 3 to 6 mgm/L).

Porphyria

From the department of Neurology at Wisconsin, Peters,[49-53] et al have used chelating agents in the treatment of porphyria in 45 patients.

Methods of Treatment

BAL was used as a 10 per cent solution in 20 per cent benzyl benzoate in peanut oil. Doses ranged from 50 to 1,200 mgm/24 hours in divided doses. Therapy varied from four to sixty days consecutively. In several cases, 1 to 3 injections of 100 to 300 mgm/wk for as long as two years has been employed. With the exception of a questionably related transient erythema multiforme, no toxic effects of BAL or EDTA have been encountered.

Na_2 EDTA was also used in dosages comparable to that discussed earlier. The choice of chelating agent depended in part on a history of lead exposure, EDTA then being used preferentially.

Results of Chelation Therapy

A total of 45 patients were treated, including 31 acute hepatic porphyrics, 5 mixed hepatic porphyrics, 8 "paraporphyrics"* and 1 chronic porphyric patient.* Thirty-seven responded favorably to chelation therapy, 4 showed equivocal responses and 4 were classed as failures. Twenty-three of the 31 acute porphyrics, all 8 of the "paraporphyric" group, as well as the 5 mixed porphyrics and 1 chronic porphyric seemed to benefit from chelation therapy. Fifteen of the acute porphyrics and 2 of the mixed porphyrics were in very critical condition from advanced neuropsychiatric symptomatology prior to chelation therapy, despite prior ineffectual use of ACTH in 5 cases. All but 3 of this group seemed to have benefited by chelation therapy, with complete recovery from a tetraparesis noted in 6 patients. Of special interest was the frequently rapid improvement in schizophrenic and other psychiatric symptoms shortly after initiation of chelation treatment. The reader is referred to these re-

* The term "paraporphyric" is used by Peters[54] for those patients clinically resembling the known porphyric group, but in whom excretion of urinary uroporphyric and porphobilinogen was not demonstrated. The "paraporphyric" manifests an increased fecal protoporphyrin excretion, elevated delta-amino levulinic acid (a porphobilinogen precursor) in the urine, and, at times, increased urinary zinc or copper.

ports for more complete and fascinating descriptions of the responses.

Discussion

Increased delta-amino levulinic acid levels in the urine of acute porphyrics was first noted by Granick and Vanden Schrieck[55] and was also reported by Mauzerall and Granick.[56] The quantitative determination of delta-amino levulinic acid, a porphobilinogen precursor, is recommended by Peters et al. as a useful screening device. Elevation of urinary zinc levels from 2 to 36 times normal before chelation therapy seemed to parallel more closely in the acute porphyric during exacerbations than did abnormal porphyrin excretion. Thus, a direct correlation was found to exist between this excessive zinc excretion and the acuteness and severity of the disease, while excretion of abnormal porphyrin metabolites did not parallel symptomatology.

In porphyrin biosynthesis, *succinate + glycine* unite to form *delta-amino levulinic acid* which in turn condenses to form *porphobilinogen.* Porphobilinogen then provides pyrol units from which uroporphyrin, coproporphyrin, and protoporphyrin originate. An enzymatic block at any one of these levels of transformation could account for the withdrawal and excretion of important metabolites from the system. Uroporphyrin and coproporphyrin are excreted in acute porphyria in both urine and feces as zinc metal complexes, according to Watson and Schwartz.[57] Gunther,[58] in an earlier report, had recognized that urinary porphyrins in these patients were often combined with a metal. Peters [51, 53] suggests that zinc accumulation or of another heavy metal such as copper, might be responsible for such an enzymatic block and that chelation of these cations by BAL and/or EDTA corrects the metabolic error. The increased levels of zinc excretion in the urine before chelation are in support of this view. In one case cited, the twenty-four hour zinc excretion in the urine was 18.0 mgm/L (normal value of urinary zinc = 0.5 mgm.(L).' During chelation the daily zinc excretion reached a peak level of 34.8 mgm/L. falling to a normal level after forty-two days of therapy. Zinc excretion then remained normal despite continued chelation. The increased exretion of zinc during chelation suggests rapid neutralization of heavy metal toxicity by binding and removal of the zinc from vulnerable enzyme systems.

Once again we encounter lack of controls, unpredictability of spontaneous remissions and the variation of severity so characteristic of this disease. However, the results are strongly suggestive in view of the high mortality reported in severe cases by others and the prompt improvement noted in Peters' severely ill patients treated by chelation.

The reader is referred to other reports in the literature which deal with the treatment of porphyria with chelating agents.

Nickle and Chromium Dermatitis

The chelation phenomenon has also been of value in the inhibition of metal-induced cutaneous allergic reactions.

Kurtin and Orentrich[59] state that a bound metallic ion cannot cause an allergic reaction. They used a chelating agent applied in ointment form (2 per cent $NiSO_4$ was chelated with 10 per cent EDTA) in 10 patients with a strongly positive nickle patch test. Patch tests of 5 per cent nickle sulfate were applied over uniform layers of the chelated ointment and also over its control base. They found that the ointment inhibited the appearance of a positive nickle patch test applied over the ointment site. This phenomenon is called "Chelation Blockade".

This phenomenon opens a new and practical approach to the management of the common metal sensitivities. The presence of trace metals in toiletries, therapeutic agents and household products may be the cause of the continuation of a dermatitis in sensitive patients. It is possible that the addition of a chelating agent may inhibit this.

In the tanning industry, chromium compounds (made up of concentrated reduced chromium salts) being corrosive in nature, in contact with broken skin can produce

a rapidly penetrating skin ulcer. Chromium can be found at the base of these lesions and this tenacious deposit prolongs the eroding action and inhibits healing.

Previously, in order to remove the chromium ion, it was necessary to use reducing agents (e.g., sodium bisulfite) to reduce chromate to chromic, the trivalent form and then manually curette the base of the ulcer.

Maloof [60] used an ointment containing 10 per cent EDTA Ca in a base of hydrous wool fat. Twenty-four hours after application of the ointment, the ulcer crater was cleaned out. In 54 cases of chrome skin ulcers, the treatment was 100 per cent effective. Only six cases (10 per cent) required an additional 2 to 3 applications to loosen and clean the crater. Forty-eight cases responded dramatically to only one application of the chelating ointment.

Toxic Effects of Intravenous Chelating Agents

1. *Local* — Thrombophlebitis proximal to the site of administration. It is recommended that these agents be administered in no greater than 0.5 per cent solutions in 5 per cent glucose in water or saline.

2. *Hypocalcemia* — Frank tetany is not common in patients who show normal or elevated initial serum calcium levels, even with rapid infusions. It has been shown that infusions at rates up to 15 mgm. per minute produce no marked changes in serum calcium levels, and no symptoms of hypocalcium. Occasionally, symptoms of numbness and tingling of the fingers and perioral areas occur near the end of infusions.

3. *Renal Damage* — renal tubular damage has been reported with pathologic changes resembling that seen with mercury or potassium dichromate intoxication. Oliguria and nitrogen retention has also been reported. Dudley et al.[61] report the death of two patients following treatment with disodium EDTA in dosages exceeding 5 gm. per day over a protracted period of time.

4. *Histamine* — like reactions, including lacrimation, nasal congestion, and bouts of sneezing.

5. *Glycosuria* — apparently related to renal changes from excessive doses and prolonged administration of these agents.

6. *Dermatitis* — lesions have varied from erythematous macular-papular lesions, to bullae and ulcerations on the oral mucous membranes and exfoliative forms of dermatitis. Lesions tend to clear rapidly on cessation of chelation therapy, and some respond dramatially to B-complex vitamins, especially B_6.

7. *Miscellaneous* — mild hypotension, nausea and diarrhea, abdominal cramps, febrile reactions, abnormal urinary findings.

8. *An Excessive Chelation Syndrome*— can be produced by the administration of dosages exceeding 3 grams in a twenty-four hour period for compounds of the EDTA series. The syndrome is charaterized by an acute febrile state four to eight hours following the infusion, accompanied by marked myalgia, headache, nasal congestion, urinary urgency, chills and a leukopenia, subsiding within eighteen to twenty-four hours, with reversjon to normal clinical findings.

Clarke [62] and his associates have given more than 4,000 infusions of edathamil without complications, except for mild gastrointestinal upsets and local burning at the site of infusion. It was rarely necessary to stop the infusion.

In order to minimize the toxic complications: Seven [63] has recommended the following points for maximum safety:

1. Concentration—no greater than 0.5 per cent in 5 per cent D/DW or D/NS.

2. Rate of infusion—no more rapidly than 15 mgm. per minute.

3. Total dosage per twenty-four hours is not to exceed 3 gm. in an average sized patient or no more than 50 mgm/kg.

4. In prolonged administration, frequent rest periods are desirable, e.g., administration of drug for five days of each week.

5. Courses of therapy should be relatively short, with rest periods, e.g., course

of three weeks' duration, followed by a rest period of one week.

6. Concomitant administration of B vitamins, especially B_6 is advisable.

7. Periodic urinalysis, blood urea nitrogen levels and postprandial sugar levels.

Summary

Certain basic concepts of chelation therapy have been presented. The use of chelating agents is widespread in medicine and therapy with metal binding agents has applications in many dermatologic disorders. Occasionally, long term therapy may produce complications; however, these agents remain an effective form of therapy if administered carefully.

The concept that certain chronic and morbid disease processes might be related in part to metal binding anomalies suggests a new therapeutic approach in medicine. Clinical medicine has available for its use a class of drugs whose full potential is yet to be explored.

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Medical College Reforms

In the midst of the numerous proclamations and pledges of reform in medical teaching which annually deluge the country, the College of Physicians of New York city exhibits an earnest determination to elevate the standard of merit of its graduates by making rigid examinations the test for award of its diplomas. Of 146 candidates for graduation, only 96 were successful in meeting the requirements exacted. It can scarcely be surmised that this large percentage of failures was attributable to an accidental accumulation of poor material. My own experience as a teacher convinces me that year by year the medical classes of the University of Louisiana, in the aggregate, show improved states of primary education, and are thus better fitted to prosecute professional study.

The percentage of rejections in the Medical Department of the University at its latest examination fell considerably below that of the College of Physicians and Surgeons, but it was larger than upon former years, and sufficiently great to impress its students with an additional realization of the fact that the faculty were still determined to make its diplomas objects worth a struggle to obtain, and permanently valuable possessions when once won.

New Orleans M. & S. J. 9:68 (July) 1881.

A Pollen Survey in the Baton Rouge Area*

• A report on the kinds of atmospheric pollens, their seasonal appearance and disappearance, and concentration.

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Introduction

POLLEN surveys are of benefit to the physician not only in estimating the severity of a particular hay fever season but also in discovering previously unrecogized agents. The clinician is aware of correlation between the presence and abundance of an antigenically potent pollen and allergic symptoms. Recent volumetric studies demonstrate their superiority over the gravimetric slide methods of pollen study in giving a better picture of the abundance and hourly fluctuation in concentration of pollens and molds.[1-4] Because of the variability of daily and annual volumetric-gravimetric ratios, it is not possible to convert gravimetric results into volumetric equivalents with any accuracy.[22] The gravimetric method is still the only practical pollen sampling procedure which is applicable on a wide scale. Recent surveys and reports have been made employing the gravimetric technique.[5-9, 25]

Because we know of no full year pollen study reported for the Baton Rouge area, it was decided to undertake a gravimetric survey for the year, January, 1959 to January, 1960. The purpose of this report is to supply information regarding the kinds of atmospheric pollens, their seasonal appearance and disappearance, and concentration.

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Vegetation

Baton Rouge possesses the first sizeable elevation above the delta along the Mississippi River and is surrounded by low swamps and bayous. It has a semi-tropical, almost coastal climate, due to its position (30° 32′ N and 90° 09′ W) and its proximity to the local bodies of water. It has a mean annual temperature of 67.5° F, a mean annual rainfall of 59.13″.

The first plant killing freeze is usually in the first week of December, and the last killing freeze usually occurs in the middle of March. Conditions for plant development, therefore, are excellent any time of the year and usually some plant species are in bloom every day of the year. The plants are a mingling of tropical and temperate species with a considerable admixture of evergreen cultivated plants.

The soil in the lowlands is alluvial flood plain soil, of alkaline silt-clay composition, and the bluff and terrace have a neutral to acid silt-loam soil. The original vegetation in this area is an extension of the eastern United States deciduous forest. Along the [12, 23] levees and bayous, cottonwood, sycamore, hackberry, gum, and willow grow as well as cypress and oak. Pine woods are present in the uplands and along river drainage. In the city, there is a great amount of weedy vegetation in vacant lots and along drainage canals.

Procedure

During 1959, from January 26th to the end of the year, and from January 1st to January 26th, 1960, pollen was collected in the Baton Rouge area. Two sampling devices were used; one located on the eastern border of the city and another about

two miles to the west of the first. The sampling device used was that recommended by the Pollen Survey Committee, American Academy of Allergy.[10]

Each device was placed on top of a flat roof, one story high. Trees were moderately abundant in both sites, which are residential areas. During the tree season, when pollen was most abundant, slides were exposed for twenty-four hour periods. When exposed for longer periods, an average figure was used representing the number of pollen grains per twenty-four hours. Glass slides measuring 1 by 3 inches were coated on one surface with a thin layer of a mixture of 75 per cent petrolatum and 25 per cent mineral oil and placed in the pollen device. After exposure, a drop of Calberla's solution was applied and a cover slip mounted for counting and identification of pollen. It was determined that the diameter of the low power field was 1 millimeter, using a 15 x ocular and a 10 x objective. The slide was traversed from side to side four times, thereby covering an area of 100 mm^2 or 1 cm^2. The results are recorded as pollen grains per cm^2. Identification of pollen was facilitated by use of a set of comparison slides furnished by the American Academy of Allgery. Also, specific field specimens were taken for reference.

Observations

Pollen grains of the same species and of closely related species tend to be alike.[11, 24, 28] The wall of a mature pollen grain consists of two membranes, an intine and an exine. By the variations in the characteristics of these membranes, pollen is identified. The size of pollen grain varies a great deal in different groups of plants although the usual size is between 7 and 35 microns. The pollen grains tend to assume an ellipsoidal or spheroidal form. Many pollens have conspicuous markings, and they may develop in groups such as tetrads. The descriptions and measurements of pollen grains in this paper are essentially those found in the text "Pollen Grains" by R. P. Wodehouse.

The tree season in winter-spring was the most impressive both in the quantity and the variety of pollens collected. There are approximately 40 varieties of wind-pollinated trees in the area.[12, 26, 27] Pollens of juniper and cypress, *Cupressaceae* and *Taxodiaceae*, were first encountered during the last week in December, followed by elm, *Ulmus*, and maple, *Acer*, in the third week of January. Birch, *Betulaceae*, pollen appeared the third week in February; and, during the first and second weeks of March, the cottonwood, *Populus*, oaks, *Quercus*, pines, *Pinus*, red gum, *Li-*

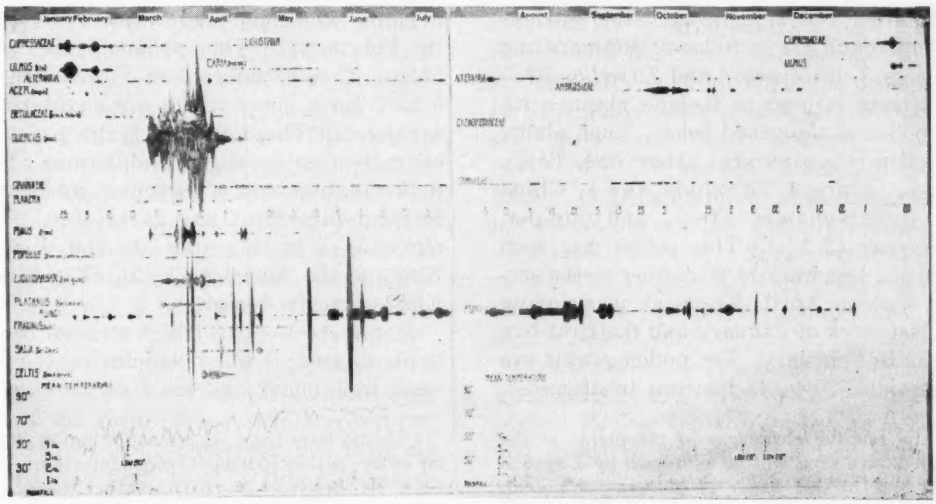

Figure 1. Onset and Concentration of Atmospheric Pollens—Baton Rouge, 1959
Each small square on graph represents 5 pollen grains per cm^2 of slide area per 24 hours.

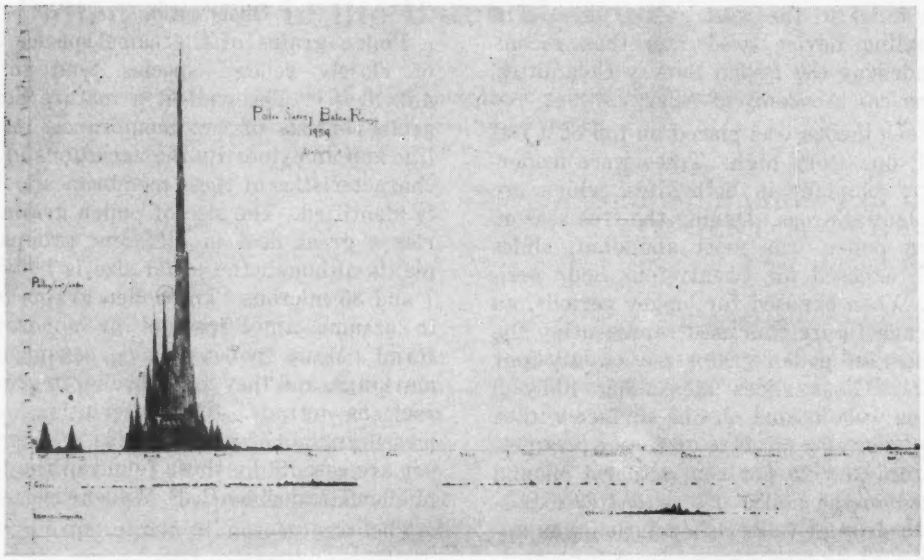

Figure 2. Total Pollen Concentration of Atmospheric Pollens—Baton Rouge, 1959

quidambar, and sycamore, *Platanus*. The ash, *Fraxinus*, willow, *Salix*, and hackberry, *Celtis*, appeared during the third week in March. The season ended with pecan, *Carya*, found from the first week in April to the last week in May. Some privet, *Ligustrum*, pollen was collected in mid-May. The pollen of greatest abundance was oak, which reached a peak in the last week of March. Most trees completed pollination by the first week of May. (Figures 1, 2, 3)

Detailed observations on the various pollens found are as follows: Junipers and Cypress, *Cupressaceae* and *Taxodiaceae*—This term is used to include plants with the pollen as described below. Such plants found in this area are: arborvitae, *Thuja* (1+),* cypress, *Taxodium* (4+), China fir, *Cunninghamia* (1+), and juniper, *Juniperus* (2-3+). This pollen was seen from the last week in December to the second week in April. The peak was during the last week of January and the first two weeks in February. The pollen grains are spheroidal, 20 to 32 microns in diameter, have a very thin transparent exine which easily ruptures and is often cast off when the pollen grain is wet. The exine is covered with flecks; the intine is thick, and makes up one half of the bulk of the grain. The inner border of the intine is irregular and star shaped. This pollen is considered of secondary importance in the production of hay fever in this area.

Elm, *Ulmus*—Pollination was noted to begin during the second week in January, peak during the last week in January, and was completed by the third week in February.† The pollen grains are oblate, 23 to 38 microns in diameter, have 3 to 7 germ pores which are equatorially arranged. The texture of the exine is characterized by slight undulations. Elm pollen is abundant, is allergenic, and therefore an important hay fever tree. The elms (3+) in this area are the Winged Elm and the American Elm. (The Water Elm is described later.)

Maple, *Acer*—This pollen was not found in abundance; it was noted during the last week in January and the first two weeks

* The relative abundance of the plants in the Baton Rouge area will be expressed by a system of plusses in this paper as follows—0- absent, 1+ scarce, 2+ common, 3+ abundant, 4+ very abundant.

† This is later than is normal for Baton Rouge in other years (personal communication — Dr. Clair A. Brown). Specific weather factors in 1959 may account for this and some of the other pollen found in 1959.

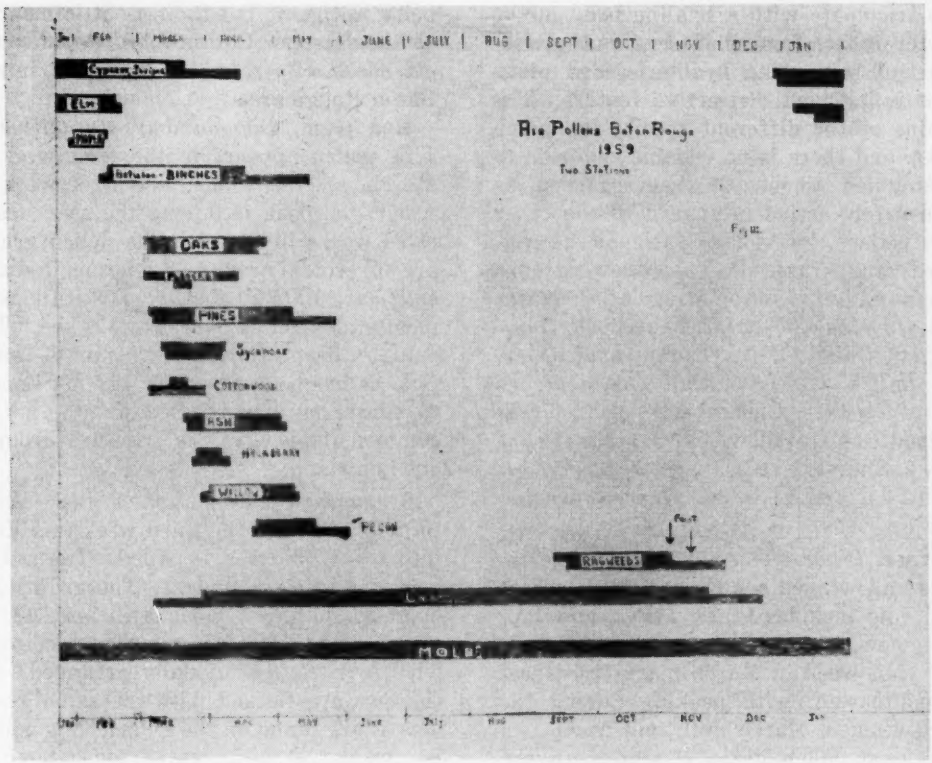

Figure 3. Onset and Termination of Atmospheric Pollens Observed—Baton Rouge, 1959

in February. The pollen is oblately spheroidal, from 28 to 36 microns in diameter, usually tricolpate, and has a granular texture with the granules arranged in striae. Maples are both insect and wind pollinated. In the Baton Rouge area there is the Drummond Red Maple (3+). Maple pollen is considered to be of secondary importance in allergy.[13]

Birch Family, *Betulaceae*—This season begins in mid-February, reaches a peak in mid-March, and ends early in April; an occasional grain was found until mid-May. The pollen measures 20 to 40 microns, is faintly granular, spheroidal or oblately flattened, has 3 to 7 germ pores equally spaced around the equator. Most characteristic, however, is the aspidate area around the germ pores (shield like area around the germ pores). Birch pollen has been shown to be antigenic, but little attention has been paid to other members of this family. Members of this family found in Baton Rouge are: River birch, *Betula nigra* (2+), American hornbeam, *Carpinus caroliniana* (2+), and Eastern hophornbeam, *Ostyra virginiana* (1+). The following have pollen grains which are spheroidal and aspidate, and therefore similar to birch pollen, probably represented in the total birch count, and responsible for such an apparent prolonged birch season: Wax myrtle, *Myrica cerifera* (4+), and Osage orange, *Maclura pomifera* (1+), are both present in Baton Rouge. A pollen similar in appearance to the above, but smaller (14 micra), is that of Paper mulberry, *Broussonetia papyrifera* (1+), and Red mulberry, *Morus rubra* (2+). It also is probably included in the *Betulaceae*.

Oaks, *Quercus*—The onset of pollination was during the first week in March, peaked during the third week in March, and ended in mid-April; a few granules were seen until the last week in April. The pollen grains are spheroidal, oblately flattened, and angular in outline. They

are tricolpate with a hyaline body in the center of each furrow. The exine is granular and thin. The hyaline wedge plugs give it its most distinctive feature. The grains of the different species are much alike, and there is no reliable criterion to distinguish them. Oak is regarded as moderately active in regard to the other tree pollens, but not as antigenic as ragweeds and grasses.[14] The following oaks are found in the Baton Rouge area: Water oak, *Quercus alba* (2+), Laurel oak, *Quercus laurifolia* (1+), Overcup oak, *Quercus lyrata* (2+), Nuttall oak, *Quercus nuttallii* (2+), Cherrybark oak, *Quercus pagoda* (3+), Willow oak, *Quercus phellos* (2+), Shumark red oak, *Quercus shumardii* (2+), and Live oak, *Quercus virginiana* (4+).

Pines, *Pinus*—This term is used to indicate all winged coniferous pollen grains seen, and includes Pines, *Pinus*, and Japanese yew, *Podocarpus macrophylla* (1+). The first week in March marks the onset of pollination, with peaking during the third week in March until mid-April. An occasional pollen grain is seen until the second week in May. Pine pollen measures 45 to 100 microns exclusive of bladders. The body of the moistened grain is in the shape of a double convex lens. The dorsal side has a thick rugged exine; on the ventral side are two large air sacs. The pollen is carried for long distances but has little or no antigenic activity.[13, 14] In the Baton Rouge area are the Slash pine, *Pinus eliottii* (3+), the Spruce pine, *Pinus glabra* (2+), the Longleaf pine, *Pinus palustris* (2+), the Loblolly pine, *Pinus taeda* (4+), and the Shortleaf pine, *Pinus echinata* (1+).

Cottonwood, *Populus*—The pollen appears from the first through the fourth week of March; only a few granules were found. The grains are spheroidal, acolpate (no germ furrows), very thin, and the exine often fragmented but minutely reticulate or granular. The intine is thick. The grains are highly adapted to wind pollination and cottonwoods disperse huge amounts of pollen. The Western Cottonwood, *Populus Sargentii*, is mentioned as being antigenic but there is little mention of the Eastern Cottonwood, *Populus Occidentalis* (2+), which is found in the Baton Rouge area.

Red Gum, *Liquidambar styraciflua*—This pollen appears in the first week in March, and lasts until the first week in April; the peak is during the second and third weeks in March. The pollen grains are spheroidal around 38 microns in diameter, have 10 to 20 circular pores; the pore membranes bulge and are flecked. The exine is deeply pitted with minute round pits. It has been suspected but not known to cause hay fever. Red gum (4+) is common and is widely distributed throughout Louisiana.

Sycamore, *Platanus occidentalis*—Noted to pollinate from the third week in March into the first week in April. The pollen was at no time abundant. The grains are oblately flattened, various in size, 18 by 14 microns to 21 by 17 microns tricolpate, with furrows meridionally arranged; the furrows are flecked with the same granules as are found on the exine. This pollen is considered to be only moderately allergenic.[14] Sycamore (2+) is very abundant on the Mississippi River bottomlands.

Ash, *Fraxinus*—Pollination lasts from the third week in March to the fourth week in April; only small amounts of the pollen were collected. The grains measure around 24 microns, are flattened and angular. They usually have four furrows, and a reticulate pattern on the exine. Ashes produce large quantities of pollen which are borne for great distances. Green ash, *Fraxinus pennsylvanica* (1+) is common in Louisiana, but the White ash, *Fraxinus americana*, once abundant, is scarce. Allergy to Ash pollen is considered to be rare.[14]

Willow, *Salix*—Pollination onset is the third week in March, peak in first week in April, and termination in the last week in April. The grains are spheroidal flattened, three lobed, 18 microns in diameter, tricolpate, and have a reticulate exine with sharply angular lacunae and vertical ridges. Willows are primarily insect pollinated, but the pollen is nevertheless

caught on atmospheric slides. It is sometimes important in hay fever. Black willow, *Salix nigra* (3+) is widely distributed in Louisiana.

Sugarberry or Hackberry, *Celtis laevigata*—Onset of pollination is the third week in March and lasts until the first week in April. The grains (Wodehouse)

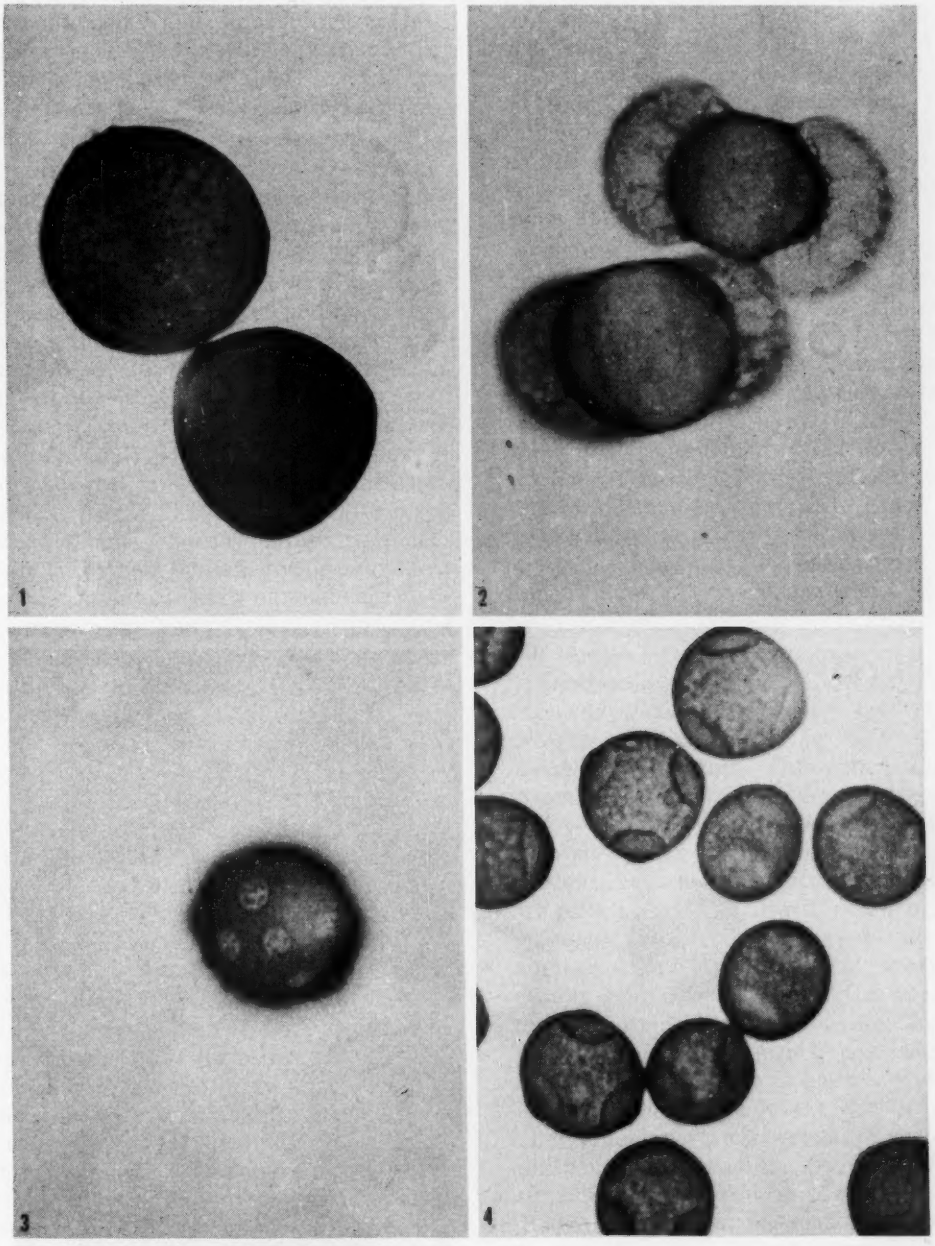

Figure 4. 1. Pecan Pollen, meridional view.
2. Japanese yew pollen.
3. Sweet gum pollen. Note bulging pore membranes.
4. Blue beech pollen. Note three pores with aspidate subexineous thickening surrounding pores.

are spheroidal, measure 40 microns in diameter, have three germ pores equally spaced about the equator, and are aspidate but have no protrusions above the surface of the grain. Little attention has been paid to the antigenic qualities of hackberry. Hackberry (3+) is widely distributed in Louisiana.

Privet, *Ligustrum Spp*—A few grains were seen on slides during the second and

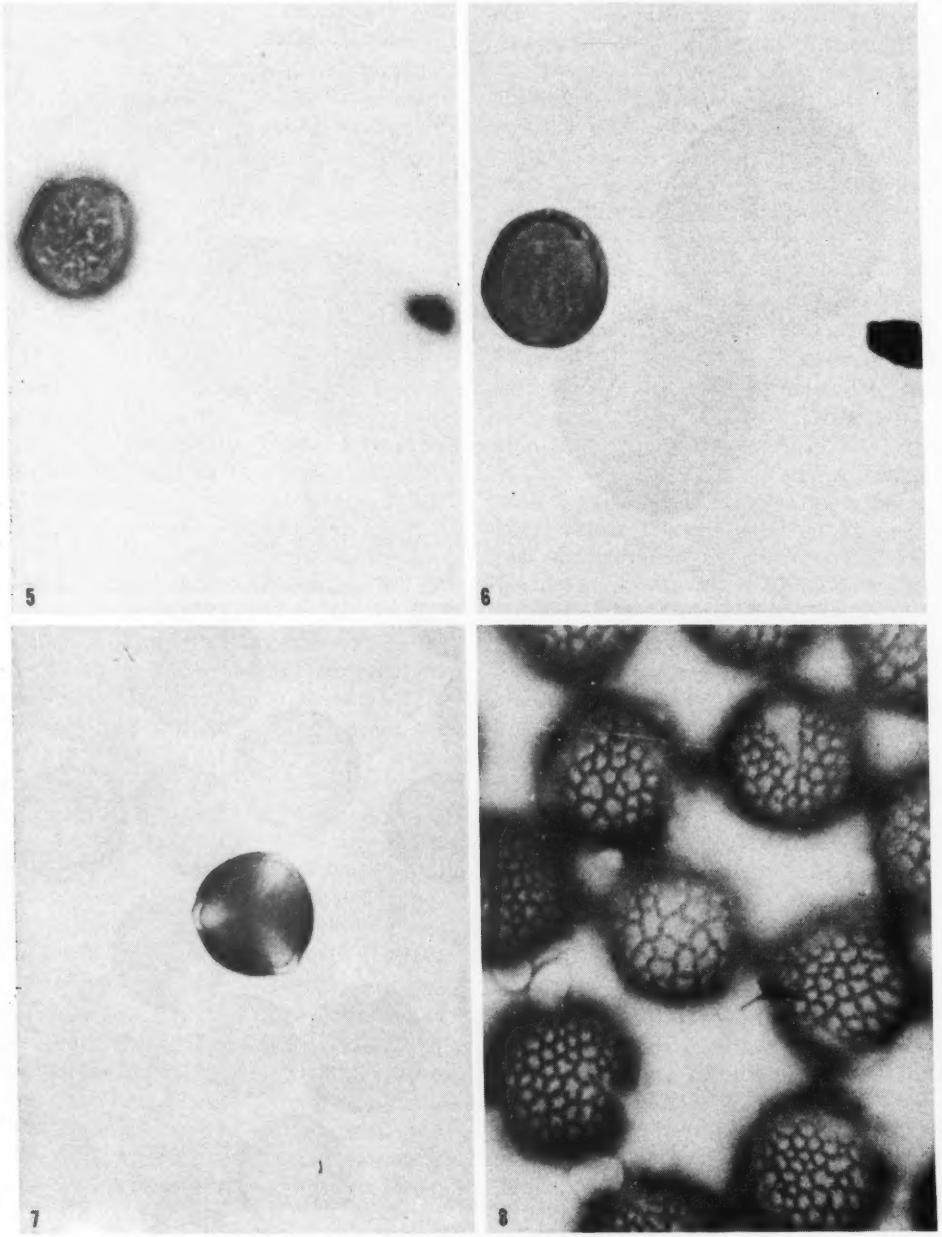

Figure 5. 5. Cottonwood pollen. Surface detail; note fragmentary exine.
6. Cottonwood pollen. Meridional view; note thick exine.
7. Oak pollen. Note three furrows, and bulging exine.
8. Ligustrum pollen. Note beaded appearance of exine.

the third week in May. The grains measure 28 to 30 microns, have a coarse, reticular exine with large lacunae, presenting a beaded appearance; there are usually three furrows. For the most part it is insect pollinated[21] and probably not an important cause of hay fever; however, some pollen is collected on slides.[21] Ligustrum (3+) is a widely planted shrub in Baton Rouge.

Pecans and Hickories, *Carya* — Pecan pollen was first note during the second week in April, and a few grains were found until the first week in June. The grains are spheroidal, about 45 microns in diameter, have three germ pores, subexinous thickenings, and a granular texture. Pecan, *Carya illinoensis* (2+), is an important source of hay fever pollen.[15]

Planera tree or Water elm, *Planera aquatica* (1+)—Pollen was noted during the last week in February into the first week in April. These pollen grains were not abundant. The grains are flattened, 30 to 55 microns in diameter, usually have four germ pores, each surrounded by a subexinous thickening.

The relative abundance of plants other than trees in the Baton Rouge area[12] is as follows: grasses (4+), ragweeds (4+), composites (4+), amaranths (2-3+), chenopods (1-2+).

Grasses, *Gramineae*—Grass pollen first appeared on the slides during the first week in March, was present in meager amounts, and disappeared after the first winter freeze on the seventh of November. A few granules reappeared during the second week in December, but, with this exception, grass pollen was not observed when the mean temperature dropped below 50° F. Grass grains are usually spheroidal, vary in size, have a thin unsculptured exine with a slightly granular surface, and a thick hyaline intine. In the interior, starch granules are packed; there is a small hyaline body opposite the single germ pore. It is not possible to identify grass pollen as to species. Pollen from wild grasses measures less than 35 microns, from cultivated cereals, over 35 microns with corn being over 125 microns. In Baton Rouge, the earliest grass is annual blue grass, *Poa annua* (2+). The summer grasses are carpet grasses, *Axonopus Spp* (3-4+), and dallis grass, *Paspalum dilatatum* (3-4+). In Baton Rouge, crab grass, *Digitaria sanguinalis* (3+), yard grass, *Eleusine indica* (2+), and Johnson grass, *Sorghum halapense* (4+), are found during the summer and fall. Fall grasses are smut grass, *Sporobolus poiretii* (2+), Bermuda grass, *Cynodon dactylon* (4+), and beard grass, *Andropogon Spp* (3-4+).

The practice of cutting grasses on lawns tends to increase their pollinating season and to prevent the occurrence of peaks. Bermuda grass is the most active hay fever grass in the South, a common lawn and field grass. Italian rye grass, a lawn grass, *Lolium multiflorum* (1-2+), is found to some extent in Baton Rouge and is a known antigen. Johnson grass is considered an important hay fever grass, but some believe its pollen is too large to permit wide dispersal. All grass pollen contains similar allergenic qualities, though many allergists use only local grass pollens in skin testing.

Amaranths and Chenopods, *Amaranthaceae* and *Chenopodiaceae*—A few grains were found on slides during the first and last week of August. This pollen usually appears about a month before ragweed and persists into September. The moist, expanded pollen grains measure 19 to 35 microns, have a thin and granular exine, are psilate (unadorned with ridges or projections), and cribellate (possessing a number of rounded germinal apertures equally spaced). Because of the close botanic relationships, and the similar appearance of the grains, it has been assumed that these species possess cross reactions. These groups are not of great allergenic importance because of their low antigen quality and the poor production of pollen by some of them. Found in Baton Rouge are: redroot pigweed, *Amaranthus retroflexus* (3+), spiny amaranth, *Amaranthus spinosus* (3+), green amaranth, *Amaranthus viridis* (3+), lamb's quarters, *Chenopodium alba* (1+), and Mexi-

can tea, *Chenopodium ambrosioides* (1-2+).

Ragweed tribe, *Ambrosiaceae*—This pollen appeared during the third week in September, peaked the first week in October, and was last seen the first week in November. Generally, however, it appears during the last week in August or the first week in September. The termination correlated with the first fall frost, with a

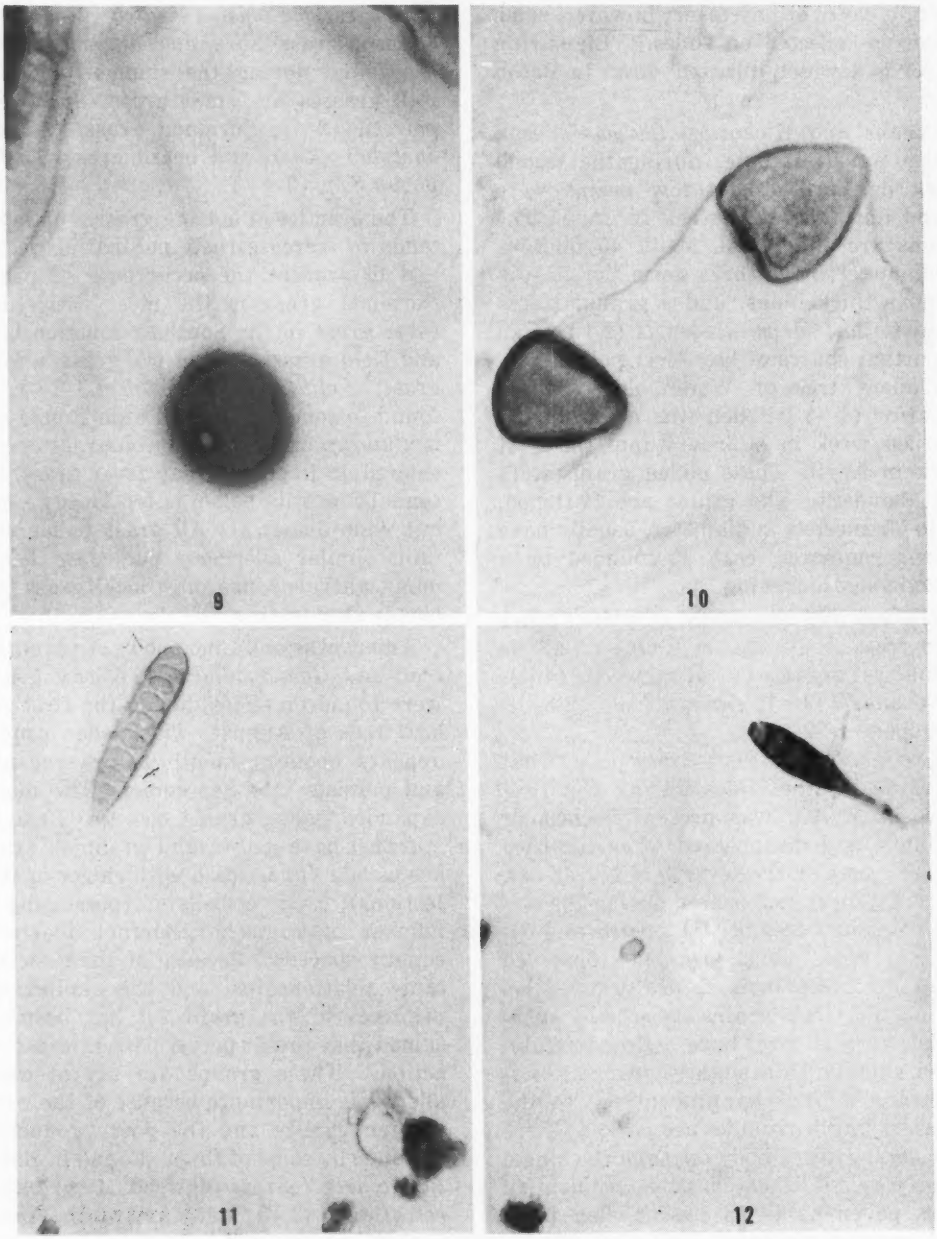

Figure 6. 9. Grass pollen. Note single germ pore.
10. Sedge pollen. Note pear-shape.
11. Fungus spore, probably Helminthosporium.
12. Fungus spore, Alternaria.

temperature low of 28° F. on November 7, and a second frost on November 17, with a low of 29° F. A few unidentified granules of *Ambrosiaceae* were seen in December and January.

There are common antigenic qualities in the ragweed, composite, and the chicory families. Ragweed is related to the insect pollinated sunflower, aster, and goldenrod. There is a great abundance of pollen wherever short and giant ragweed are located. Studies with partial ragweed extermination in New York City area reveal that up to 90 per cent extermination in one borough resulted in no appreciable decrease in pollen counts done by gravimetric method, presumably due to air contamination from adjacent areas.[16] Pollen counts done in areas where no ragweed plants were present reveal that the pollen can travel for considerable distances. Smith and Rooks[3] by using a volumetric sampling device confirmed earlier gravimetric studies relating to the diurnal variation of air borne ragweed pollen: 47 per cent appeared from 6:00 A. M. to noon; 43.6 per cent noon to 6:00 P. M., 5.8 per cent 6:00 P. M. to midnight, and 3.6 per cent midnight to 6:00 A.M. For the most part ragweeds pollinate in late summer when the days become shorter, i.e., it is the shortening of the day that provides the stimulus for flowering.[17] For example, in the North ragweed pollen may appear during the second week in August; while in the South, it is the first week in September. The anthesis of cockleburs occurs at the same time as ragweed, and its pollen strongly interacts with ragweed. Cocklebur is, however, a minor factor in allergy because there is only a small amount of pollen per plant. In Baton Rouge, the following are found: short ragweed, *Ambrosia elatior* (3-4+), giant ragweed, *Ambrosia trifida* (3-4+), groundsel-tree, *Baccharis halimifolia* (3+), marsh elder, *Iva ciliata* (4+), and cocklebur, *Xanthium Spp* (3+). Pollination was noted as early as July and as late as November. The pollen granules are spheroidal or oblately flattened, 16 to 30 microns, tricolpate usually, and have three meriodionally aranged germinal furrows. The exine is granular, usually with spines.

Plantains, *Plantago* (1+), the docks, *Rumex* (2+), and the sedges, *Carex* (+3) are present in the Baton Rouge area and probably contribute a minor amount of pollen in summer and fall.

Fungi, *Alternaria* and others — Fungi were found on slides the year round, but only sparsely during December. They were most abundant from March to September. The conidia of *Alternaria* are tadpole shaped, brown, and have cross walls in two planes. No attempt was made to differentiate the other spores. Allergy to extracts of fungi is well recognized as a common finding encountered in skin testing.[18-20] Their relative importance as a cause of hay fever and asthma is to be determined. Cross sensitivity between the fungi is not as great as within pollen groups.

Summary

A study of the atmospheric pollen in Baton Rouge during 1959 by the gravity slide technique was done using two observation stations. The late winter-spring pollen observed was dominated by that from trees beginning with the cypress group and ending with the pecans. Grass pollen was found in modest amounts most of the year except for a short period in December and January. Weed pollen was observed from late summer into the winter months with ragweed pollen found in mid-September and ending abruptly with the first frosts in November. Fungi were seen on the slides throughout most of the year and in greatest abundance during spring and summer.

The information gathered in this study of the pollen content of the air throughout the various seasons of 1959 should serve as a useful guide to the kinds and amounts of anemophilous plant pollen in the air in the Baton Rouge area.

Acknowledgments

The authors wish to express their appreciation to Dr. Clair A. Brown, Professor of Botany, Louisiana State University, for his most helpful assistance re-

garding the flora in the Baton Rouge area and to Dr. Vincent J. Derbes, Professor of Medicine and Head of the Section on Allergy, Tulane Medical School, for his help and suggestions in the preparation of this manuscript.

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Discussion

Dr. Neill K. Weaver (Baton Rouge): Drs. Harris and Madey have carried out and here reported the first systematic, detailed, and allergenically-oriented pollen survey in the Baton Rouge area. As they point out, the local flora consists of a mixture of semi-tropical and temperate zone specimens. This area is somewhat unique, botanically speaking. A practitioner of allergy would be ill advised to apply in this area information on allergenic pollen derived from a mid-western temperate zone city, say St. Louis or Chicago, or from a more nearly tropical city, as Miami. And, I am convinced that more subtle but clinically significant differences exist in the timing, amounts and varieties of aero-allergens released locally as compared to New Orleans or Shreveport. Hence, their study should be most welcome to local allergists (and their patients!).

The authors' botanical treatment of the aeropollens is skillfully done, and more complete than is usually reported in a survey of this kind. Their morphological descriptions should prove useful to others who may be motivated to carry out similar observations. The duration of anthesis of the significant wind pollinated plants for 1959 seems well delineated. For example, they found the onset for the Ambrosiaceae to be some 3 or 4 weeks later than usual; this corroborates our clinical observation of delayed occurrence of symptoms in ragweed sensitive patients last fall. I also suspected, from clinical experience, that the amount of fall pollen was reduced last year. Their quanitiative charts reveal that pollen of the ragweed group occurred in low or moderate amounts. In contrast, spectacular quantities of tree pollen, especialy oak, were recorded at both sampling stations. It is indeed fortunate that tree pollen generally show a low order of antigenicity, causing symptoms in relatively few patients. The grass pollinating season was found to be prolonged, but of low intensity, as is characteristic of the southernmost states.

Drs. Harris and Madey are to be highly commended for undertaking and reporting this survey. It is hoped that they will see fit to continue and extend their observations. For it is only by the temporal correlation of qualitative and quantitative data of local airborne pollen with clinical situations (the results of skin tests, and—more particularly—the occurrence of allergic symptoms in patients) that the practice of allergy in this area will achieve a truly scientific basis.

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Editorial

Medical Assistance For The Aged In Public Law 86-778

In the Congress which convened in January 1961, American medicine and the public again face a serious threat of state medicine. Twelve years ago, the same threat was imminent when it was backed by the socialist group and the Truman administration. In a courageous and forceful campaign the dangers of socialized medicine were explained to the nation, and the plan was defeated. Its proponents, however, said at the time and lived up to their plan of attempting to establish state medicine through increments of congressional legislation or state medicine by the back door.

Many bills with this design have been presented by the socialists to Congress. Most of these have failed of enactment. A few have succeeded, such as the law which provided medical care to Social Security beneficiaries who have become disabled. In the past two years, the outgrowth of this type of legislation has appeared under the guise of providing medical care for persons on the Social Security rolls who had passed 65, the Forand type of legislative proposal.

Thirty-three such bills were presented to the Eighty-sixth Congress, dealing in some way with health care of the aged. Many of these bills seem to imply that as those who were aging passed the point of 65, a state of dire need supervened; that professional and economic constituents of medical care for this group were lacking; and that the only way to meet this pressing need was through a compulsory Social Security tax providing universal coverage for the group in question.

The proponents of such laws ignore the fact that the aged have always been provided for within the limits of family and community resources. That a man ages as he lives and there is no rapid transition from economic competence to aged deficiency in the majority of persons. Such social planners should also realize that preparation for age has long been an attribute of the socially adequate person, and approximately two-thirds of those beyond

65 have some form of prepaid medical expense insurance.

The successful politicians previous to the recent presidential campaign correctly estimated that the election might be decided by less than 1 per cent of the voting electorate. There are sixteen million persons over 65 in this country. Of these 2.4 million already are on state welfare rolls. Approximately 12 million others are Social Security beneficiaries. The support of 10 per cent of the latter prospectively gained through a tax supported program could conceivably swing the election.

To this end many bills of the Forand type were directed. Organized medicine placed itself in opposition to this form of legislation. In a statement of policy adopted by the House of Delegates of the American Medical Association in June 1960, it was stated:

> "Personal medical care is primarily the responsibility of the individual. When he is unable to provide this care for himself, the responsibility should properly pass to his family, the community, the county, the State, and only when all these fail, to the Federal Government, and then only in conjunction with the other levels of government, in the above order. The determination of medical need should be made by a physician and the determination of eligibility should be made at the local level with local administration and control. The principle of freedom of choice should be preserved. The use of tax funds under the above conditions to pay for such care, whether through the purchase of health insurance or by direct payment, provided local option is assured, is inherent in this concept."

Organized medicine, on the basis of such a policy contributed to the defeat of these socialistic proposals. It also contributed substantial support to a different type of bill, the Kerr-Mills bill, which became Public Law 86-778. This law appropriates an extra 202 million a year in public assistance grants to the states. The provisions were that the money be used to expand care for the 2.4 million placed already on the State Welfare rolls, to set up new programs to cover other aged, who might not qualify for general relief, but who might under special circumstances need help to pay their medical bills. Fundamentally, it is to give help to those who need help.

This bill was enacted in September 1960, and was attacked during the Presidential campaign that followed. The contention was that it did not go far enough—presumably was too conservative. The bill is broad in its provisions and its implementation is to be carried out under laws and directives administered by the individual states. The only limitation on the scope is that only those persons over 65 years of age who are not on Old Age Assistance are eligible.

Competent legal authorities have stated that in the field of Federal legislation there has seldom been a medical program tailored so exactly to the specifications suggested by organized medicine, local definition, and determination of eligibility, local choice of scope of benefits, and method of payments, and minimal Federal control. The advocates of socialized medicine will attack this bill and will advocate legislation of the Forand type. They will insist upon the Social Security tax and compulsory Social Security eligibility.

In arguing the relative merits and demerits of the two types of legislation remember that:

1. Under this law: Medical care is authorized for any person over 65 who needs help.

   Under the Forand bill: Care would be provided regardless of need—but only to 60% of the persons over age 65.

2. Under this law: Any type of care can be provided as decided by the state.

   Under the Forand bill: Only hospitalization, nursing home care, and some surgical care would be authorized.

3. Under this law: All fees are determined by local regulation.

   Under the Forand Bill: Fees would be promulgated by the Department of Health, Education and Welfare.

4. Under this law: The program sup-

plements voluntary health insurance.

Under the Forand bill: The program would compete with and stifle voluntary health insurance.

The Forand type of legislation was defeated in part through the efforts of organized medicine in September 1960. In the coming forensic contest we will have all the strength that we were able to muster then. In addition, the Democrats have lost 23 votes in the House. The fear of radical legislation in times of economic crisis will further a coalition of conservative elements. Additional arguments will be that the bill as enacted should be tried before a radical and socialistic departure is made from established practice.

The ultimate operation and success of the Kerr-Mills bill will be in the hands of the medical profession. Recognizing that the AMA has endorsed the bill, that more than any other it places help within the reach of those who need it most, and that it provides freedom of choice and local autonomy which we consider essential, the physician can with good heart undertake to do his part in seeing that the bill works.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

THE URGE TO SUE *

Growth of Malpractice Suits Has Put U. S. Doctors on the Defensive; Last Year's Cases Totaled Estimated $50 Million in Costs and Settlements.

More and more U. S. doctors are learning a bitter lesson: medicine is an inexact science, but there is little room for error as far as the courts are concerned. According to the American Medical Association, one in every seven physicians has been sued for giving treatment that a court may decide is contrary to accepted rules and injurious to the patient. Last year alone, 6,000 doctors were sued. Jury awards in malpractice suits have nearly trebled since 1950; lawyers' fees, courts costs, damages and out-of-court settlements in last year's cases totaled an estimated $50 million.

The result, Time says in a survey of the growing trend, is that almost 95% of all U. S. doctors carry malpractice insurance and many feel like sitting pigeons for unscrupulous patients and lawyers. Some doctors now dodge giving aid in Good Samaritan cases, which form a small but rich field for malpractice suits. Such emergency accident cases demand haste, often catch the doctor ill-equipped and ill-prepared.

Doctors vs. Lawyers

Mr. C. Joseph Stetler, Secretary of the Council of Legislative Activities A.M.A., attributes the urge to sue on exaggerated stories of new drugs, methods of treatment and "miracle" surgery, which "lead the public to believe that anything less than a perfect result is per se evidence of negligence." Some doctors insist that only 10% of all malpractice suits have any merit; the rest, they claim, are nothing more than "legalized blackmail."

Not so, say trial attorneys like San Francisco's Melvin M. Belli, who estimates that he has filed more than 1,000 malpractice suits (75 actually went to trial), relieved doctors and insurance companies of $8,000,000 in judgements and out-of-court settlements. Belli says that "most of the verdicts are justified, because judges and the law have put so many safeguards around doctors." He points out that in some states (e.g. Arizona, New Mexico) malpractice suits are "very rare indeed," because doctors flatly refuse to give testimony that would show medical negligence by their colleagues. Doctors' self-imposed silence has prompted two states—Massachusetts and Nevada—to permit use of standard textbooks in court to establish prudent practice.

Lost Sponges, Mismatched Blood

A.M.A. studies show that two-thirds of malpractice claims originate from in-hospital accidents. Sponges occasionally are sewn into patients' stomachs (a group of California hospitals

* Reprinted from News Release from *Time, The Weekly Newsmagazine.*

recently reported a run on "lost sponges"—18 in a single year). Obstetricians have been known to deliver one baby and quit, leaving its twin behind. Surgeons have removed a kidney only to discover that one is all the patient had. A more common cause: transfusions of mismatched blood, which kill about 3,000 patients a year in the U. S., injure thousands more. In such cases, where human error is clearly responsible, courts hold that the injured patient need not produce expert testimony to prove the physician's negligence.

Doctors also have been sued for failing to spell out risks. Earlier this year, after a Kansas woman suffered burns from radio-active cobalt therapy for her breast cancer, her physician was judged negligent—even though the treatment was skillfully performed—simply because he failed to tell her there was risk of radiation burn and therefore, said the court, had not obtained her "informed consent" to the treatment.

St. Peter Says Go Back

Out of fear of malpractice suits, many doctors have become careful, and even ultra-cautious, about the kind of medicine they practice. The results: higher costs and—in certain cases—poorer medical care. Some anesthetists now shy away from medically advisable spinals, because the public imagines them to be dangerous and thus is prone to sue if something goes wrong. Many general practitioners no longer will dispense telephone advice or permit prescription refills. Doctors dislike these dodges, but they feel in real pocketbook danger. A joke going the rounds among physicians said that St. Peter greeted a man at the gates of heaven saying: "You weren't due here until 1965. Go back and sue your doctor for malpractice."

NATIONAL ELECTION

We lost—but did we? This election proved that the physicians of this country are a dedicated group and are, without doubt a powerful group of citizens politically. The results of this election conclusively and forcefully bring to our attention that it is urgently necessary for the physicians of this country to immediately create an organization for political education and action in our state and the nation supported by groups of physicians and their allies, outside of organized medicine but supporting the philosophy of organized medicine. A desire to continue to practice free enterprise medicine with individual dignity and preserving the American way of life with free choice of physician and patient without federal interference should be our goal.

Only if we are well organized and united in our efforts to fight for these principles can we succeed in preventing our profession from being socialized and check the rapid advance so evident to total socialization of our country. We should not, now, abandon our position and cause, but be encouraged to fight more strongly than ever to prevent the Democratic platform from becoming the law of the land.

We must contact our Senators and Congressmen by wire, letter and in person, enlisting their support in opposing any socialistic medical legislation. Our responsibility has never been so great as now.

The following is quoted from Dr. Elmer Hess, a past president of the American Medical Association—"Keep your organization together—hold meetings—watch the legislation at the National level and help keep America free—We can do it —if we will. This is not the time to quit but to rededicate our lives to the preservation of our way of life. Don't forget that socialism and communism are not 32nd cousins, they are first cousins."

This will be a hard fight, but with your cooperation in a united effort, right and fairness will prevail and we will again be successful in defeatng all Forand type legislaton.

Now is the time to start workng—don't wait until our legislators go back to Washington. Have your patients, friends and the members of our allied professions cooperate with us in our fight for survival. "He, who hesitates is lost."

MEDICAL WARNING TAGS

We are pleased to call to your attention that the Orleans Parish Medical Society has approved the use of stainless steel Medical Warning Tags to be worn by an individual patient subject to some disease which might necessitate urgent and immediate medical attention. This is more fully explained in the following letter received by the Secretary-Treasurer on October 8, 1960 from Mr. Kuhlmann, Executive Secretary of the Orleans Parish Medical Society.

Dr. C. Grenes Cole, Secretary
Louisiana State Medical Society
New Orleans, Louisiana

Dear Doctor Cole:

RE: Medical Warning Tags

As mentioned to you a few days ago, the Orleans Parish Medical Society approved the use of stainless steel Medical Warning Tags by patients with certain clinical conditions. Perhaps you will find this story merits mentioning in your next news letter.

This Tag, which may be worn around the neck or as a bracelet, is designed to identify the wearer as a special medical case, and flashes an immediate unmistakable warning to the person who aids a shock victim. Furthermore such a tag is not affected by water, soap, detergent or perspiration, and will not bend, break, fade or become discolored.

Not infrequently in medical practice and hospital work patients are first seen when they are unconscious. Under these circumstances considerable time may be required to make a correct diagnosis or to eliminate many conditions that might have caused the actual trouble. The Warning Tag would enable physicians and others to save much valuable time in starting proper medical care and will thereby save many lives that might otherwise have been lost.

The Society's Public Health Committee, which recommended the use of this "Tag", was of the opinion that it is a much better means of identification than the card carried by special medical case patients, because most police officers are prohibited from examining immediately the contents of handbags or billfolds, and sometimes precious life-saving minutes are lost before an identification card is found and examined; also a child in shock presents another problem, since purses and billfolds are not always carried.

Yours sincerely,

Signed: A. J. KUHLMANN

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A.M.A. DUES INCREASE

All members should, without fail, carefully read the article on raising of dues in the December 12 issue of A.M.A. News. Dues are to be increased $10.00 on January 1, 1962 and $10.00 additional on January 1, 1963.

The reasons for the necessity of increasing the dues are well presented in the above mentioned article, and we sincerely hope our members will see the wisdom of the action of the House of Delegates, and will cooperate fully with these plans in order that the association can go forward with the inauguration of new programs and expansion of existing programs.

Members will continue to receive the A.M.A. Journal, Todays Health, A.M.A. News, and the specialty journal of their choice, published by the Association.

ADDITIONAL COMMITTEE CHAIRMEN

Louisiana State Medical Society

(Since publication of list in August 1960 issue)

ALCOHOLISM
Dr. D. H. Texada, Jr., Alexandria

ARRANGEMENTS FOR 1961 ANNUAL MEETING
Dr. Eugene H. Countiss, New Orleans

BUDGET AND FINANCE
Dr. Emmett L. Irwin, New Orleans

DEPARTMENT OF PUBLIC WELFARE
Dr. H. H. Hardy, Jr., Alexandria

DOMICILE
Dr. L. Sidney Charbonnet, Jr., New Orleans

HISTORIAN
Dr. P. H. Jones, New Orleans

HOSPITALS
Dr. Walter Moss, Lake Charles

JOURNAL
Dr. C. M. Horton, Franklin (Vice-Chairman)

LIAISON—PUBLIC POLICY AND LEGISLATION AND CONGRESSIONAL COMMITTEES
Dr. Arthur D. Long, Baton Rouge and Dr. B. O. Morrison, New Orleans—Co-Chairmen

LIAISON—LOUISIANA STATE BAR ASSOCIATION
Dr. Daniel M. Kingsley, Alexandria

MEDICAL AND HOSPITAL SERVICES IN RE INSURANCE CONTRACTS
Dr. A. J. Ochsner, Alexandria

REVISION OF CHARTER, CONSTITUTION AND BY-LAWS
Dr. A. V. Friedrichs, New Orleans

SCIENTIFIC WORK
Dr. C. Grenes Cole, New Orleans

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Ascension	Third Tuesday of every month	
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Lafayette	Second Tuesday of every month	Lafayette
Morehouse	Third Tuesday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Tangipahoa	Second and fourth Thursdays of every month	Independence
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

SPRING MEETING—WEST VIRGINIA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

The West Virginia Academy of Ophthalmology and Otolaryngology will hold its Fourteenth Annual Spring Meeting, April 6, 7, 8, 1961 at the Greenbrier Hotel, White Sulphur Springs, West Virginia with the following guest speakers in attendance:

1. Harvey E. Thorpe, M. D., Pittsburgh, Pennsylvania:
   1. Recent Developments and Personal Experiences in Cataract Surgery
   2. Clinical Gonioscopy
2. John J. Shea, M. D., Memphis, Tennessee:
   1. Fenestration of the Oval Window After Five Years
   2. Vein Graft Tympanoplasty
3. F. Johnson Putney, M. D., Philadelphia, Pennsylvania:
   1. Laryngeal Keratosis: A Clinico-Pathologic Problem
   2. Neck Dissection in Cancer of the Larynx
4. Irving H. Leopold, M. D., Philadelphia, Pennsylvania will give two lectures in which the titles will be announced later.

Also Mr. Philip Salvatori of Obrig Laboratories will present an entire afternoon session devoted to "Contact Lens".

The new officers of the Academy will be installed at that time and they are as follows:

President—John A. B. Holt, M. D., Charleston, West Virginia

President - elect—Albert C. Esposito, M. D., Huntington, West Virginia

Vice President—William K. Marple, M. D., Huntington, West Virginia

Secretary-Treasurer—Worthy W. McKinney, M. D., Beckley, West Virginia

Director—James T. Spencer, M. D., Charleston, West Virginia

Director—Alan Fawcett, M. D., Wheeling, West Virginia

There will be a registration fee of $25.00.

For any additional information, please contact the secretary, Dr. Worthy W. McKinney, 109 East Main Street, Beckley, West Virginia.

IVth INTERNATIONAL CONGRESS OF ALLERGOLOGY

The IVth International Congress of Allergology will be held at the Hotel Commodore, New York City, October 15-20, 1961. It is anticipated that this will be a large and interesting meeting for all of those concerned with allergic diseases and related fields of immunology. At the main meetings there will be simultaneous translations of all papers in English, French, German and Spanish. Prominent physicians and scientists, from all parts of the world, have been invited to take part in conferences, symposia and panel discussions. Among the subjects to be presented are:

Genetics in allergy; Acquired tolerance; Transplantation immunity; Drug hypersensitivity; Contact allergy; General mechanisms in allergy; Mechanisms of antibody fixation; Delayed hypersensitivity; Auto immune processes; Steroid therapy; New methods in allergy, etc.

All physicians registering are invited to present communications which will be grouped in various sections according to subject matter. An active program of entertainment is being arranged with several receptions, one at the Metropolitan Museum of Art, and a Banquet. For the ladies, there will be a program of luncheons, fashion shows, and visits to the United Nations and other points of interest.

The registration fee for regular members will be $45.00, for wives $20.00. These registration fees will include the printed proceedings and admission to the receptions. The banquet will be

charged separately. As the attendance is expected to be large, it is requested that persons interested obtain additional information from Dr. William B. Sherman, 60 East 58th Street, New York 22, New York.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY SOUTHERN MEDICAL ASSOCIATION

At the meeting of the Southern Medical Association in St. Louis, Missouri on October 31 to November 3, 1960, the following officers were elected for the Section on Ophthalmology and Otolaryngology for the coming year:

Chairman, Dr. Miles L. Lewis, Jr., 1539 Delachaise Street, New Orleans, Louisiana.

Chairman-elect, Dr. Samuel D. McPherson, Jr., 1110 West Main Street, Durham, North Carolina.

Vice Chairman, Dr. Claude D. Winborn, 3707 Gaston Avenue, Dallas, Texas.

Secretary, Dr. Albert C. Esposito, First Huntington National Bank Building, Huntington, West Virginia.

The next meeting of the Section will be held in Dallas, Texas in November, 1961. Those interested in participating should write to the secretary of the Section, Dr. Albert C Esposito.

A.M.A. STANDS FAST ON POLICY RELATING TO GRADUATES OF FOREIGN MEDICAL SCHOOLS

The American Medical Association has announced that it is standing fast on its policy relating to grauates of foreign medical schools, but offered a proposed educational program that will ease the plight of nearly 2,500 foreign physicians who have failed to pass qualifying examinations and face deportation.

The A.M.A. said it is standing by its policy because it believes graduates of foreign medical schools should meet the same minimum standards of education as graduates of U. S. medical schools as nearly as can be measured. These standards have been set up to insure patients in hospitals proper medical care.

The American Medical Association pointed out that American students graduating from foreign medical schools are required to pass this same examination before being permitted to continue their medical education in the United States as interns or residents which inevitably involve patient care.

Dr. Leland S. McKittrick, Boston, chairman of the A.M.A. Council on Medical Education and Hospitals, said that through mutual agreement with the State Department in Washington, the American Medical Association, the American Hospital Association, and the Association of American Medical Colleges, hospitals will be urged to develop a special educational program for this group of foreign graduates who failed. The program, however, will not involve patient care. The proposal calls for the program to be carried out until June 30, 1961. This will permit the U. S. Immigration and Naturalization Service to extend the educational exchange visas of these foreign doctors and enable them to take the Educational Council for Foreign Medical Graduates examination next April 4.

Details of the educatioanl program, Dr. McKittrick said, will be worked out by each individual hospital in order to conform to the specific educational needs of the foreign doctors. Under such a proposal there will be no sudden forced exodus of those who have failed previous examinations. After December 31, hospitals face loss of approval of their intern and residency programs if the programs include foreign medical graduates who are not certified by ECFMG.

In the past, foreign physicians were granted visas to continue their education under the Smidt-Mundt Act. The U. S. Immigration and Naturalization Service issued the visas, working closely with the State Department in its educational and exchange program for foreign students. To qualify a foreign graduate had to be enrolled in an educational program approved by the State Department. The intern and residency program, whose educational standards were established by the A.M.A., was accepted by the State Department as meeting the requirements set forth in the educational exchange program authorized by Congress.

Hereafter, foreign doctors, who seek training as interns and residents in this country under the exchange program, must pass examinations in their own countries before coming to the United States. Oly then will they be allowed to apply for a five-year exchange-visitor visa.

More than 70 per cent of the foreign physicians who took the last ECFMG examination in September passed it. The total represented 5,306 out of 7,303. Dr. McKittrick said that 1,405 foreign doctors took the test in 66 centers outside the United States, and 926 passed it.

"With hospitals facing loss of approval of their teaching programs after the December 31 deadline," Dr. McKittrick said, "the immediate problem from the standpoint of everybody concerned is with the group of 2,481 foreign doctors who failed their examinations and face theoretical deportation."

Dr. McKittrick said that "there must be a balance of two basic concerns—for the American patient and for the foreign graduate."

"We must recognize the right of every patient in an American hospital to a quality of care which can be given only if every physician—regardless of origin—is fully qualified. But we must be equally interested in the impact of America on the foreign physician coming to these shores."

Dr. McKittrick said that the high standards in intern and residency programs maintained by the A.M.A. serve only one purpose: to insure the highest quality of medical care to all hospital patients."

Dr. McKittrick emphasized, therefore, that foreign graduates who have failed to pass the examinations conducted by the ECFMG will NOT be permitted to continue with their intern and residency program after December 31, but we have been assured by the State Department that they will be permitted to remain in the United States until June 30, 1961, providing they are enrolled in an acceptable new program developed by the hospital. This program, Dr. McKittrick said, will have nothing to do with direct patient care, but will provide an opportunity for the foreign physician to continue his education and better prepare him for future examinations.

Dr. McKittrick said that hospitals which continue to accept foreign graduates, who failed in their ECFMG examinations, in their intern and residency program will run the risk of having their program disapproved.

AMERICAN BOARD OF OBSTETRICS AND GYNECOOGY

The Part 1 Examinations (written) will be held in various cities of the United States, Canada, and military centers outside the Continental United States on Friday, January 13, 1961.

Reopened Candidates will be required to submit Case Reports for review thirty days after notification of eligibility.

Scheduled Part 1 Candidates are also required to submit their twenty (20) Case Abstracts in order to complete the Part 1 Examination.

Current Bulletins outlining present requirements may be obtained by writing to the Executive Secretary's office. Robert L. Faulkner, M. D., American Board of Obstetrics and Gynecology, 2105 Adelbert Road, Cleveland 6, Ohio.

AID REPACES AX FOR DRINKING EMPLOYEE

American industry is giving aid instead of the ax to its alcoholic employes.

An article in the December Today's Health, published by the American Medical Association, said business firms have awakened to the staggering cost and innumerable problems related to the harboring of "hidden" alcoholics, or firing them without attempting rehabilitation.

Many companies have established alcoholism programs to seek out the problem drinkers in their ranks and offer them treatment.

"Not too many years ago all companies treated the excessive drinker as a moral problem and thought it better left alone," the article said.

"Industry's new 'soft' approach to the alcoholic promises more than just a break for the man unable to control his taste for alcohol. It means the alarming growth of alcoholism in industry is coming under direct attack in the office and in the factory where the early stages of the problem drinker may be detected through close observation of his behavior pattern."

There are various estimates of the number of alcoholics in industry, the article said. It is commonly accepted that there are more than three million with one estimate as high as five million.

Alcoholism costs industry more than 500 million dollars annually in hospitalization and known expenses and an estimated 10 billion dollars more each year in indirect costs resulting from absenteeism, inefficiency, and accidents.

It is not easy to detect an alcoholic in industry, the article pointed out. Research indicates that it takes 10 to 15 years of increasingly steady drinking for a person to become completely addicted to alcohol and many efficient workers do not exhibit signs of deterioration for a long time. In addition, fellow workers usually cover up for the drinker and rarely tip off supervisors about the problem.

The company programs emphasize that alcoholism is a treatable disease, recovery is possible for all alcoholics, and the complete cooperation of the patient, his family, employer, and fellow worker is necessary.

BEACHHEAD ESTABLISHED IN BATTLE AGAINST TRAFFIC ACCIDENTS

A beachhead has been established in the battle against traffic accidents—a scientific study to determine if reckless driving is a disease.

The study to determine whether there is some correlation between physical shortcomings and driving performance was described in an article in the December Today's Health, published by the American Medical Association.

"Nothing of such scope has ever been attempted before," the article said. "The criteria established by such research may some day prove to be a sort of 'vaccine' against reckless driving.

"This will be the first big step toward further refinements of all physical criteria for determining qualification for a driver's license. Such criteria would be needed by state motor vehicle authorities to invoke sterner control measures and, if challenged, to produce scientifically valid proof that would stand up in court."

From 20,000 to 25,000 Connecticut motorists will undergo a voluntary screening in a specially built six-room mobile clinic to determine if there is a relationship between their physical, physiological, or psychological conditions and their driving records, with the emphasis on physical factors. Each will be tested for hearing and vision deficiencies, diabetes, anemia, and heart and lung pathology.

Later, depending on the findings of the initial

studies and the availability of appropriations, the investigation will be extended to physiological factors, such as the effect of drugs on drivers, and psychological factors, such as the effect of drivers' emotional attitudes on their driving.

Medicine, public and private research, and the government have joined in a modest initial assault on the "epidemic of deaths on the nation's highways," the article said.

The U. S. Public Health Service is conducting the experiment in the field which probably will take 18 months. The follow-up task of keeping tabs on the records of the drivers who have been examined will be done by the State Motor Vehicle Department and will take at least five years.

FIFTH ANNUAL CONSECUTIVE CASE CONFERENCE TUBERCULOSIS AND RESPIRATORY DISEASE

Physicians of Alabama, Mississippi and Louisiana were invited to participate in the Fifth Annual Consecutive Case Conference on Tuberculosis and Respiratory Diseases, held at the Gulf Hotel in Gulfport, Miss., January 13-14.

Sponsored jointly by the Louisiana Tuberculosis Association and the tuberculosis associations of Mississipppi and Alabama, the conference opened with registration at 12:30 P.M. on Friday, January 13.

Conference moderators were J. Maxwell Chamberlain, M.D., New York, N. Y.; and Max Michaels, M.D., Jacksonville, Fla.

William Leon, M.D., New Orleans, chaired the opening session which began at 1:15 P.M. on Friday. "Ten Consecutive Cases of Thoracic Trauma Seen In Private Practice" was discussed by Richard A. Dillard, M.D., Medical College of Alabama. Dr. Dillard was followed by Myra D. Tyler, M.D., University Medical School, Jackson, Miss., who spoke on "Ten Consecutive Cases of Lung Abscess".

The Friday session ended with a social hour at 6:00 P.M.

The second and final day of the meeting was opened on Saturday, January 14, with William Boggan, M.D. chairing a morning session at 9:00 A.M.

"Ten Consecutive Cases Erroneously Diagnosed Tuberculosis Prior To Sanatorium Admission" was presented by Arthur Viehman, M.D., Jefferson Tuberculosis Sanatorium, Birmingham, Ala.

Following were Drs. Hans Weill and Morton M. Ziskind, New Orleans, La., speaking on "Ten Consecutive Cases of Sarcoidosis from a Chest Clinic With Three Year Follow-up."

The Conferees enjoyed a luncheon at 12:15, and the final and afternoon session opened at 1:30 P.M. with Charles R. Kessler, M.D., Birmingham, Ala. chairing.

"Ten Cases of Unusual Spontaneous Pneumothorax" was presented by Drs. Howard A. Buechner, John Bickers and Morton Brown, New Orleans, La.

The annual consecutive case conferences are arranged and presented by the Trudeau and Thoracic Societies of the three states involved. These societies are the medical sections of the state tuberculosis associations.

LOUISIANA ASSOCIATION OF MEDICAL ASSISTANTS

The executive committee of LAMA will hold a meeting on January 21 and 22, 1961, at the Bentley Hotel, in Alexandria, to discuss plans for the First Annual Meeting in Monroe on March 10, 11, and 12, 1961, and other matters.

It is hoped that those medical assistants who are interested in becoming a member of the American Association of Medical Assistants will contact the committee (Mrs. Julia Dudden, membership chairman) at the Bentley Hotel, in order that a plan may be made for forming a chapter in Alexandria.

BOOK REVIEWS

Hand Book of Medical Treatment; (Seventh Edition) Edited by Milton Chatton, Sheldon Morgan and Henry Brainerd, Lange Medical Publications, 1960. 569 p. $3.50.

Within the last decade the handbook format has become increasingly popular. There are those to whom this represents a disturbing trend. It has been recognized, also, that to keep well informed in pharmacologic research is practically impossible for the physician in practice. His attempts to acquire knowledge and understanding of clinical applications may meet frustration with the ephemeral efficacy of many drugs. The expressed purpose of this handbook is to provide a readily accessible collection of therapeutic procedures for patient care. It is in essence an elaborated outline.

Within this framework, a rather impressive volume of information has been compiled. It is assumed that the patient has been evaluated and a diagnosis established. Classical findings in certain diseases are listed under the heading

"Diagnosis", but surely are intended to serve only as reminders of the usual findings in a specific clinical entity. A large proportion of space is given to drug therapy, including toxicity and side effects. Dosage schedules are provided. A number of tables are incorporated into the text. Approximately two hundred fifty topics are offered in the space of five hundred pages, and the code numbers are given for clinical entities. General and specific therapeutic measures are listed.

No effort has been made to adapt therapeusis to individual patients. That which is proposed is the usually expected management of the average uncomplicated case. Intrinsic defects in such a plan of management and the errors resulting from possible over-interpretation are obvious. It should be voted that, if the limitations are recognized, the physician in general practice with a large volume of patients may find valuable assistance in situations requiring immediate therapy. This time is made available to devise a comprehensive plan of patient care. For the purpose indicated, the book is considered adequate.

RUTH STERLING HOFFMAN, M. D.

Master Your Tensions and Enjoy Living Again; by George S. Stevenson and Harry Milt, Prentice Hall, 1959, pp. 241. Price $4.95.

This is another in the long series of "How To—" books, whose aim, to help people lead happier lives, is certainly commendable, but whose accomplishment is frequently considerably less so. The present volume, however, differs in that practical suggestions and recognizable examples are offered the reader by the authors, as aids in handling the tensions of everyday living. The volume is primarily intended for the layman, but the physician will find useful material for discussion with the patient whose emotional tension is contributing to the development of symptoms which bring him to the doctor's office.

THEODORE F. TREUTING, M. D.

Nine Months' Reading; A Medical Guide for Pregnant Women; by Robert W .Hall, M. D., Doubleday & Company, Inc., Garden City, New York, 1960, pp. 191. Price $2.95.

Robert E. Hall has shown great care in the collection of headings to present for women in pregnancy. Particularly significant are such chapters as the selection of the doctor, the explanation of partnerships and their function as well as the preparation of the patient for her first visit. This will fill a need in those practices in which the persons are dealing with a group of intelligent patients. There is no disagreement with the ideals which are propounded in regard to the minimal amount of laboratory and supportive therapy advocated. The high standards recommended will serve to flay the vagrant omissions in care rendered by the general practitioner in some rural areas. No doubt exists but that this text enjoys little popularity other than in the hands of patients cared for by the obstetrical specialist.

The advice to the patient is excellent and beautifully written. However, whereas Dr. Hall expresses himself well in the paragraph under the heading X-ray Hazards by not appearing too positive, in the chapter on German Measles he takes the liberty to quote the odds of a deformity developing in the infant in various months of pregnancy, which statements may be open to challenge. When the Australian report was published in 1941 there was general fear that deformities would occur 100% in the infants of women who sustained German measles during pregnancy. As experience and reports are developed these are rapidly dropping. If this particular paragraph is to be kept up to date, Dr. Hall may find it necessary to revise this portion of the text at yearly intervals to refrain from being incorrect.

Because of the well chosen words and subjects the book appears complete with obstetrical information as well as up to date developments in both equipment and practice. It should be recommended as excitingly new.

If in the entire volume there was nothing but the very excellent opinions expressed regarding Natural Childbirth and Breast Feeding its possession would be worthwhile.

No text will take the place of the rapport that can be established between a pregnant woman and her obstetrician, however, for completeness of care and understanding this type of effort is one that should be welcomed wherever good obstetrical care is desired and practiced.

ISADORE DYER, M. D.

Christopher's Textbook of Surgery; by Frederick Christopher, Seventh Edition, Philadelphia, Pennsylvania, W. B. Saunders, 1960, pp. 1551. Price $17.00.

This is the seventh edition of what has come to be regarded as a standard textbook of surgery. Together with its companion volume, *Christopher's Minor Surgery,* it was for many years the principal reference work in undergraduate teaching of surgery.

As its predecessor began, so the new edition begins with a delightful and informative chapter devoted to the history of surgery and, unlike the previous edition, ends with a provocative new section entitled "Surgical Judgment." In between, the major subjects of surgical importance are considered, often in detail and with surprising clarity.

Although this is a new edition, there are only a few important changes that merit comment.

For instance, the chapter formerly entitled "Surgical Bacteriology, Chemotherapy and Antibiotic Therapy" is now entitled "Infections," and indeed it is little more than that. In an attempt to bring this section up to date, most of the material on surgical bacteriology has been eliminated entirely. The discussion of the use of zinc peroxide has been deleted, and there is only casual mention of the sulfonamides. On the other hand, the various antibiotics, their properties and surgical use are thoroughly covered. In the opinion of this reviewer, the chapter concerned with surgical bacteriology in the Sixth Edition is of more value to the medical student than the revised chapter because it emphasized the proven basic principles regarding infection rather than details of antibiotic therapy which change frequently.

As in the previous edition, a chapter is devoted to basic principles of technique in surgical care. Material of this type is usually included in surgical texts designed for the use of medical students, but probably serves no useful purpose. It deals with no subject thoroughly, and the techniques that are described are of such a nature that each surgeon has his own particular method of executing them. It would appear that this sort of information is best learned on the wards and in the emergency rooms of the hospital where a student serves his clerkship; in fact, there is a course devoted to just this sort of thing in most medical schools. The illustrations in this chapter are not helpful and are, in at least one instance, incorrect. Thus, in a drawing concerned with venous "cut-down", the cannula is being inserted into a vein just above the lateral malleus. This is obviously an error since in the text the author states that usually the greater saphenous vein at the medial malleus is employed for this purpose.

The chapters devoted to preoperative and postoperative care, endocrinology and metabolism in surgical care, and anesthesiology are excellent, although they have been altered but little from the preceding edition. The section concerned with the eyes is unique in that it describes in detail the operation of enucleation. The author implies that everyone should be familiar with this procedure since he never knows when it will have to be performed, and perhaps this is true.

The chapter devoted to conditions of the mouth, jaws, tongue, and salivary glands is somewhat inconsistent with the content of most of the other chapters in that operations for cleft lip and palate and radical neck dissection are described in detail with the aid of excellent illustrations. One wonders whether such a presentation is not too advanced for the medical student and, at the same time, whether it would fill the need of the surgical resident who is going to perform these operations.

The chapter on the heart and pericardium has been brought up to date by addition of a section devoted to extracorporeal circulation and open intracardiac repair of defects. The bibliography at the end of each chapter has been revised, and articles appearing as late as September 1958 are included.

Considered altogether, this is an excellent textbook of surgery, but so was the previous edition. In view of the limited revisions and additions which distinguish this from the Sixth Edition, one wonders if a new one was really needed!

OSCAR CREECH, JR., M. D.

Antithrombotic Therapy; by Paul W. Boyles, Grune & Stratton, 1959. 131 p. $5.00.

A short, concise monograph which is perhaps over-simplified because of its brevity, but should prove a useful guide to the understanding of the clinical problems of intravascular thrombosis.

The discussion includes an outline of the mechanism of blood coagulation, a discussion of the nature of clotting tests, consideration of antithrombotic reactions and the clinical use of antithrombotic agents. There is a brief, and relatively uncritical outline of thrombolytic therapy, and a final discussion of the technics of useful laboratory tests.

PAUL T. DECAMP, M. D.

Sexual Impotence in the Male; by Leonard Paul Wershule, M. D., Springfield, Illinois, Charles C Thomas, 1959, pp. 107, $5.75.

In this book the author has achieved a remarkably concise, and yet lucid, survey of the often subtle problem of impotence. Of particular interest is the impression of the undisputable importance of impotence to all mankind and medicine with which the reader is left.

In only 107 pages the author gives an adequate condensation, 174 references, of the voluminous amount of literature on impotence. The book lacks statistical analyses and hard fast facts which are understandable with such a subject. Rather, this volume is a very simply written, easily readable, sensible discussion of a multifaceted problem.

The classification of impotence into organic, quasi-organic and functional causes is simple, but complete and logical. For these reasons this classification is a definite improvement over previous ones. No attempt is made at subclassification but rather each broad heading is followed by a clear, sometimes novel-like, discussion.

Organic causes are listed and each is briefly examined.

Genital psychosomatic causes, quasi-organic, are given a separate heading. This category is useful because of its reality and its aid in bridging the gap between the other two categories.

The far more frequent functional causes of impotence are emphasized and discussed in a common sense manner. Case histories are related to support the discussion. The author suggests that when the cause of impotence has been determined as being functional the patient should not necessarily be labeled a "psychiatric case". He points out quite distinctly and demonstrates how a good percentage of patients with functional impotence are often readily aided or cured by simple psychological and/or social advice.

This short volume can be recommended to medical students and all physicians who are called upon to treat impotence because it provides the essentials for understanding and aiding such unfortunate patients.

DR. HUGH T. BEACHAM

Diagnosis and Treatment of Tumors of the Chest, edited by David M. Spain, M. D. 371 pages published 1960, Grune and Stratton, New York, $14.75.

This attractive volume was prepared under the sponsorship of the American College of Chest Physicians. It presents a comprehensive review of the current situation in the diagnosis and treatment of bronchogenic carcinoma and other less frequent tumors involving the thorax. As in all cooperative projects there is unevenness of presentation, and some of the chapters are much more stimulating and informative than others. Although 25 different contributors were involved in the production of this work, there is remarkably little repetition, and adequate cross references to the different essays are present throughout the volume. Among the outstanding contributions are those on the roentgen diagnosis of bronchogenic carcinoma by Leo G. Rigler and the discussion of pulmonary hamartoma by Coleman B. Rabin. Julian Johnson's discussion of choice of operation for bronchogenic carcinoma sets down clearly the criteria for pneumonectomy and lobectomy. Louisiana is well represented by Alton Ochsner, Sr. and Alton Ochsner, Jr. who write a very complete account of the tumors of the thoracic wall and diaphragm. A number of typographical errors are present throughout the volume but will undoubtedly be eliminated in subsequent editions. Certain chapters of the book would profit by illustrations; they would be particularly helpful in those sections which summarize briefly numerous tumors, some of which have fairly characteristic X-ray appearances. The book can be recommended as an excellent reference for students of medicine, general practitioners, surgeons and internists. It has successfully achieved its purpose of summarizing recent knowledge of the diagnosis and treatment of tumors of the chest and should go into further editions as new advances are made.

MORTON ZISKIND, M. D.

Diseases of the Skin; by James Marshall, M. D., London. Published by: E & S Livingstone, Ltd., Edinburgh and London 1960, Williams & Wilkins Company, Baltimore, Maryland, 944 p., Price, $15.00 (exclusive U. S. agents for this book).

In the preface of this excellent text on Dermatology Dr. Marshall states that he has tried to provide a book that undergraduates and general practitioners may use for reference, and one that will serve as introductory reading for postgraduate students.

It is my belief that not only has Dr. Marshall accomplished his stated intention, but has also written a text which I have found very useful as a reference book for a practicing Dermatologist. Dr. Marshall has followed the orthodox classification of diseases of the skin used by most authors of textbooks on Dermatology. This adds value to his text, in my opinion. His Table of Contents is especially well organized and reflects the author's ability in handling the subject. Many textbooks on Dermatology fail because of the complexity of their Table of Contents. His clear descriptions of diseases of the skin are excellent, and all of his discussions are enhanced by well selected illustrations.

It is my belief that this textbook will become a worthwhile addition to Dermatologic literature.

C. BARRETT KENNEDY, M. D.

PUBLICATIONS RECEIVED

Blood Diseases of Infancy and Childhood, by Carl H. Smith, M. D.

Doubleday & Co., Inc., Garden City, N. Y.: The Question of Fertility, by Georges Valensin, M. D.

Grune & Stratton, N. Y.: Clinical Cardiopulmonary Physiology, sponsored by the American College of Chest Physicians (2nd edit.)

Little, Brown & Co., Boston: Procedures in Vascular Surgery, by Richard Warren, M. D.

McGraw-Hill Book Company, Inc., N. Y.: Principles of Surgical Practice, by Emanuel Marcus, M. D., and Leo M. Zimmerman, M. D.

The C. V. Mosby Co., St. Louis: Resuscitation of the Newborn Infant; Principles and Practice, edited by Harold Abramson, M. D.

W. B. Saunders Co., Phila.: A System of Medical Hypnosis, by Ainslie Meares, M. D.; Progress in the Treatment of Fractures and Dislocations 1950-1960, by Thomas B. Quigley, M. D., and Henry Banks, M. D.

Charles C Thomas, Publisher, Springfield, Ill.: Cutaneous Manifestations of the Reticuloendothelial Granulomas, edited by Samuel M. Bluefarb, M. D.

The Williams & Wilkins Co., Balt.: Medicine for Nurses, by M. Toohey, M. D., with a chapter on Psychological Medicine, by Henry R. Rollin, M. D. (5th edit.).